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## The Origin of the Living Organism in the Light of the New Physics

WILLIAM G. H. BREHMER, M.E.,  
Oceanside, N. Y.

Perhaps the greatest achievement of modern experimental science is the demonstration of the dynamic character of the atom. Not so many decades ago the atom was little more than an abstraction. We knew at that time of some seventy or more different kinds of elemental "stuff" which defied all our attempts at further subdivision. Hence, so we reasoned, there must be a special, ultimate, non-divisible building block for each one of the different kinds of element-stuffs. These ultimate building units were our atoms.

To-day we know that the atom is not merely a simple grain of "matter," so-called. It is really an organization, and a more or less flexible one, of still simpler units which appear to be endowed with the most astounding energies. More precisely, the atom seems to be a kind of tiny solar system with planetary units, the so-called, electrons—bits of pure "electricity" so far as we can make out—whirling at tremendous speeds about even more minute suns.

How, why or whence these planetary electrons, or the solar "protons," or their mutual association to form the more complex atom-entities—these are questions which take us far beyond our present depths. Indeed, it is quite possible that we may never be able to answer such questions. What we do know with reasonable certainty is that the planetary electrons spin around the solar protons at speeds inconceivably great. Hence, the atoms are not rigid structures such as crystals for example. Nor are they "dead" bits of matter. On the contrary they are almost burstingly "alive" with the enormous energies of their inter-revolving electrons—sparks of "pure energy," as it were. This is strikingly shown in the case of radium and similar atoms.

Now, most atom organizations are susceptible to environmental influences. Some few, to be sure, like

helium are so self-contained, so "smug" as it were, that no environmental influence so far known to us is able to change their organization or their set ways. But most atoms and especially those which play an important part in the Life Process, will under certain circumstances absorb environal energy, and at other times give it off.

To illustrate the actual process of atomic self-adjustment to environment let us refer to the simplest of all atoms, the hydrogen atom shown in Fig. 1. So far as we know this atom has but one electron, E, revolving about its solar proton, P. When the atom is at low ebb, this electron spins in a small orbit. If the atom is subjected to light rays of proper frequency the electron will jump to a larger orbit. Thus, the atom absorbs a definite amount or "quantum" of radiant energy, to use the name suggested by the physicist Max Planck.

There seem to be a great many definite orbits in which the electron of the hydrogen atom will revolve, and it seems to take sudden jumps from one orbit to another. Thus, the simple hydrogen atom is capable of existence in a number of different states. Indeed, if placed in a highly-energized environment its electron may fly off into space. Such an electronless atom behaves much differently from one which has not been so deprived of its electron. It will eagerly seek another electron and in so doing will enter into an entirely new kind of environmental relationships as we shall see presently.

Many atoms, notably the so-called metallic ones, share with hydrogen, the peculiar tendency to give off one or more electrons while absorbing energy. On the other hand certain atoms like oxygen, sulphur and chlorine are ever eager to add one or more electrons to their organization. As a result of these opposed tendencies, atoms are not unlike so many lovers. Thus, if you



mix together some hydrogen and oxygen gases, and introduce an electric spark or a lighted match, the hydrogen atoms nearest the spark will momentarily absorb enough energy to cause their electrons to fly off. Conversely, the oxygen atoms will be stimulated to seize these electrons. The sudden rearrangement of both kinds of atoms is transmitted throughout the mixture of gases and results in the evolution of much heat. This heat is radiated away quickly, thus leaving the hydrogen atoms very hungry for the electrons of which they have been forcibly deprived. But the oxygen atoms will not let go entirely of their newly acquired electrons. As a result both kinds of atoms strive in effect to possess each other. An association of entirely new properties is formed—the water molecule,  $H-O-H$ .

We cannot here go at length into the ramifications of atomic organization or "behavior," so to speak. The point we wish to emphasize is that the experimental physicist, in collaboration with his philosophical brother-mathematician, is demonstrating in his laboratory that the atom is a dynamic organization subject to variation, and indeed, to progressive change as we are. He is showing us that the atom "functions" in an elemental way in response to environal conditions. He is showing us the actual mechanism whereby environal energy external to the atom becomes internal, and vice versa. He is thus reducing the subject of chemistry, and hence biochemistry, to the concepts and principles of dynamics. In a broader sense he is demonstrating the heretofore vague idea that the atom is of itself, a kind of simple organism; and furthermore, that the same forces which "drive" the atom, be they what they may, also drive the complex organization of atoms which we call the living organism.

This dynamic concept of the atom is bound to have a far-reaching effect upon the entire gamut of human understanding. Among other things, we shall have to revise our present ideas regarding the nature of our environment. For if the very atom is a kind of elemental organism, does this not imply that the entire world about us is teeming with the essence of this something we call life? Can there really be such a thing as "dead" matter? Is this not rather an invention of the heretofore uninformed human mind? Is it going too far for us to wonder if, after all, the fundamental variable of the universe is not life?

What then is the difference between so-called living and non-living substance, between the rock and the rose-bush or the robin? In its broader aspects the difference appears to be largely a matter of organization. For the ultimate particle-entities of which the rock is constituted are energized no less than, although differently from, those which compose the living organism. Only they are bound together in a way which prevents their expansion into a progressive community. Thus, the stone is in effect, an aggregation of "simple souls" so rigidly bound together—in a hard environment as it were—that to the eye it is solid, to the touch hard, to the imagination devoid of life.

But the living organism is a social community of a very high order. To begin with, it "lives" in the most remarkable medium in the store-house of nature—water. This medium is unique in the degree of freedom it allows the individual atom-members of the community. Yet it binds them, gently though nonetheless firmly, into a vast elastic unity as we shall see, presently. Hence, the living organism is, in effect, a progressive community in a high state of culture.

Now, this picturization of the living organism as a complex society of many kinds of energized particle-entities is most helpful to our understanding of the origin and the intimate nature of the living organism.

For all of us have occasion to observe on every hand the behavior of people in crowds, the birth and growth of business and political organizations, and so on. And if the primordial atom-entities of which we vast, "going" concerns are compounded behave in crowds somewhat as we ourselves do, then it is not beyond us to understand in some measure the actual process of our becoming.

For example, suppose you were to introduce a novelty of some kind into a crowd of people. Almost immediately a ring of individuals will establish themselves about the new center of interest. People from the outside will try to squeeze themselves into this ring. Hence, the persons in the inner ring are crowded together and upon the subject of interest. Someone may even be injured in this cumulative development of *pressure* about a center of interest. Now, if in addition, your novelty should be a barrel of pennies, then it would not be long before these pennies were seized and entirely absorbed by the crowd. A barrel of silver dollars would no doubt be "dissolved" with even greater zest. Perfectly natural you would say—so obvious in fact, that you would hardly feel the need for comment upon such an example of crowd action.

Now, when we investigate the behavior of crowds in the world of atoms we find many phenomena which remind us of human crowd-action. Thus if you drop a foreign particle into a vessel of water this particle will be immediately surrounded in many cases by a dense ring of water molecules. And this ring will tend to squeeze the particle into a smaller space. If your particle should be a crystal of sugar it would be quickly broken up and absorbed by the crowd, not unlike your barrel of pennies. A crystal of table-salt,  $NaCl$ , would even be split-up into sub-particles, the sodium ion, i.e., a sodium atom minus a planetary electron, and the chlorine ion, i.e., a chlorine atom with an extra electron.

To be sure, we must not overdo this comparison between the inter-action of individuals in the world of human beings and of those in the world of atoms. But since we know so little anyway of the intimate nature and causes of things and especially since the little we think we know is usually couched in a language which only a few highly-trained specialists can understand, a little experimentation in this kind of portrayal is not without justification.

Now, the variety of things which will interest a crowd—and be seized upon if the crowd could have its way—is a never-ending source of wonder to the student of life. Yet this acquisitiveness of the human is hardly more remarkable than the diversified absorptive power of a crowd of such simple "beings" as water molecules. For the chemist will tell you there is hardly a thing in the entire environment which these water molecules will not in some measure dissolve.

We refer with wonder to the restless energy of a throng of people. But this surge of the crowd is really quite tame compared to the mad seething of particles within a drop of water. Of course, we cannot see the water molecules directly. But we can, by means of trans-illumination under a high-powered microscope, actually see how very fine particles in suspension are severely buffeted about by the tiny, invisible water molecules. To one who has been accustomed to think of a drop of water as just so much "stuff" there is nothing more illuminating than this Brownian movement of colloidal particles, so-called after its discovery a century ago by the botanist Brown.

Another phenomenon of great interest and importance is so-called capillary action. Thrust a clean glass rod, let us say, into a cup of water and the molecules in the immediate neighborhood will instantly seize hold



of the rod and rush up its smooth surface—for all the world like a valiant, well-trained army scaling the walls of a fortress. This tactile energy of the water molecule is so great that a thin column of water may rise some four or five feet against the force of gravity in a fine capillary tube.

In view of the tremendous and ceaseless activity in-

And as soon as contact is effected between such enveloping films the "tension" inherent in them tends to unite them into a common film of lesser area.

Now, squeezing together of the particles A and B by a common surface film tending to reduce its area like any other stretched membrane, would crowd the water molecules away from the point of contact between the



Fig 1 - The Hydrogen Atom

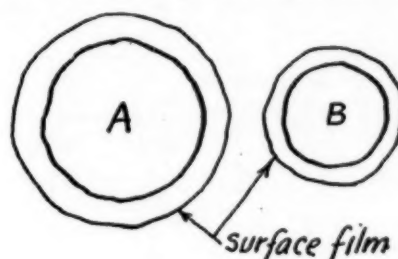


Fig 2 - Two random water-borne particles before contact

herent in any body of water at ordinary temperatures, it is not difficult to understand how the primordial earth waters must have become filled, in the course of eons, with a wide assortment of environal particles and sub-particles. Given this tendency of the entire gamut of environal substances to become dissolved in some measure within the earth waters, to find a common meeting place as it were, within this mothering fluid, water, we may now trace the process of life organization.

We have already observed how a water-borne particle (with certain exceptions which we need not here consider) is surrounded by a swarm of molecules trying to split it up and compress it into the smallest possible space. Now, suppose two random particles of neutral character, A and B, Fig. 2, were to bump into each other quite accidentally—without any pre-design in their meeting. Then the pressure of the crowd about A and B would tend to squeeze these particles into the smallest possible space.

If A and B were strongly self-repellent they might not be so pressed together. But we have here assumed the general case in which these particles were neither self-repellent nor attractive. Hence, in the most general case A and B would be enveloped in a common surface "film" somewhat as shown in Fig. 3. That is, the water molecules surrounding the particles behave in effect, as if they formed a taut membrane about each particle.

particles. But unless A and B were almost down to molecular size, or else strongly self-attractive—special cases which we are not warranted in assuming—the water molecules about the point of contact would not be squeezed out entirely, but would be formed into a thin film as at point C, Fig. 3. Obviously the intensity of film tension in this interstitial film would be much higher at the contact point C, than at some point as D in the peripheral film.

Now, suppose a very small particle, E, should strike the large particle A as in Fig. 4. Then by virtue of the existence of a higher unit tension at point C, the particle E would in time be drawn into the zone between A and B, as shown in Fig. 5.

Or to state this effect in terms of the principle of space economy, evidently the group A B E as shown in Fig. 5, would occupy less space than it would in Fig. 4. Hence this least-space arrangement would tend to develop under the influence of the crowd pressure of water molecules.

Let us assume that our original aggregation of two particles were to become a cluster of a great many particles of different sizes and types. Such a heterogeneous aggregation would in due time assume a kind of self-organization as shown in Fig. 6. The peripheral portions would consist of the larger, less active particles and particle-groups; the center would be a self-concen-

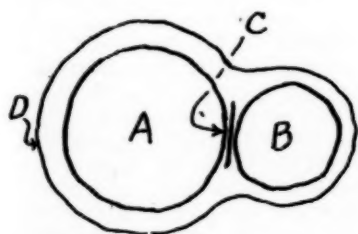


Fig 3 - Same particles after contact; note single enveloping film, also "high-tension" contact film

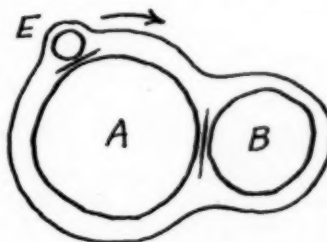


Fig 4 - Migration of small particle toward "high-tension" center

trating mass of the smallest, most highly energized ones.

Now, the generalized form of organization shown in Fig. 6 is strongly suggestive of the organization pattern typical of the living cell. For nearly all but the most highly specialized living cells consist essentially of one or more nuclear concentrations of the very finest particles surrounded by a rather loose, elastic plasm of

other environal particles of greater "fitness," as it were. Eventually, the organism or at least the nucleus would be composed of particles approaching molecular sizes. This refining of the particle-structure would in turn increase the absorptive power of the cell. And so, the process of organization once established, would tend to gather momentum and transform the rather quiescent

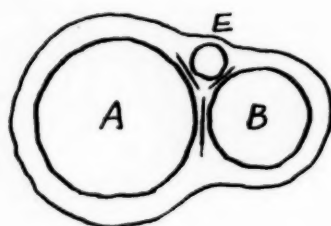


Fig 5- Elementary Organization of three particles

lesser particle density. It has been known for a long time that the nuclear structures play the dominant rôle in the cell processes. But the nature of this nuclear control has remained a good bit of a mystery. If, however, we view the organism in the light of the process of organization herein outlined, we get something of a clue to the meaning of the various structural and functional characteristics of the cell.

To begin with it is a matter of experimental fact supported by mathematical reasoning that the intensity of surface tension associated with particles in aqueous suspension varies inversely with the size of the particles. Thus, the pressure exerted by the combining film upon two large particles in contact is a very gentle one. But in the case of particles approaching molecular sizes, the "combining pressure" assumes enormous values—some thousands of atmospheres according to some computations. It must be evident, therefore, that the nucleus of the cell organization must contain a tremendous concentration of surface tension. Hence it must have a high absorptive capacity. Or if we view the organism from the viewpoint of environal "pressure," the nucleus is, in effect, the very center of this organizing pressure. That is, the nucleus is the central focus within which the smallest, the most highly energized and most social environal particles "seek" to concentrate themselves—in much the same way that the ablest and most energetic organizers in human society force their way into the nuclear centers of industrial and social "organisms."

From the above considerations it would appear that the becoming organism portrayed in Fig. 6 would be in continual process of concentration. The fine particles within the nucleus would give way to still finer ones seeking entry. The ones dispossessed from the nucleus would be thrust outward and displace the coarser peripheral particles only to be displaced in turn by still finer ones crowded out of the nucleus. Thus, the organism would be traversed, in effect, by a growing "stream" of energized environal particles working their way into the interior of the organism in proportion to their energy values, and giving way, sooner or later, to

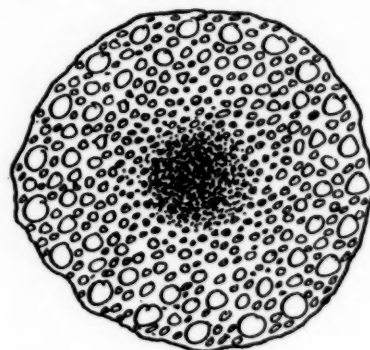


Fig 6- General pattern of pre-living organism ; note self-concentrating nucleus

organism into a state of intensive and diversified "industry."

Now, it must be evident that such an organism would not grow by simple peripheral accretion like a crystal in its mother liquor. But it would grow rather from the "inside out." Hence, although development would be dependent upon continual renewal of environal energy supplies, the actual developmental processes would be under the initiative and control of the central nuclear structures. This would be in line with our observations on the functioning and especially the psychic phenomena of the living organism.

Very likely so generalized a process of life origin as we have portrayed would have begun in many localities and under widely differing circumstances. Hence it would have resulted in many different types of organisms. Broadly speaking, the most generalized types would probably have lent themselves most readily to the highest and most varied concentration of energized particles. In all likelihood these would have forged ahead under the pressure of environal energy much further than other types which tended toward a too-specialized development. The same considerations would lead us to believe that the composition of the living organism is not so much in the nature of a "chemical" or direct union between the constituent particles; but these would seem rather to be woven together in a dense yet elastic network of the thinnest, strongest watery films. In other words, the secret of the living organism is not in its chemical composition but in the maintenance of its permeability to environal energy. It is the organization, the arrangement of the constituent particles and the maintenance of an expansive relation to environal energy which give to the organism its unique properties. We have already noted that the organism appears to grow from the inside out. And it would seem from this consideration that continued development of a given organism would depend upon internal or nuclear growth, keeping ahead of external or body growth.

One of the early and important faculties developed

(Concluded on page 258)

## Prolapse of the Rectal Wall

CHARLES J. DRUECK, M.D., F.A.C.S.

Chicago, Ill.

Prolapse of the rectum or procidentia as it is sometimes called, is the descent of one portion of the rectum or anal canal into or through a lower portion. The prolapsed portion may or may not appear externally.

The various terms applied to this condition are not wholly descriptive and some confusion occurs from the use of the several names. The word "prolapse" comes from "prolabi" and signifies "to slip down." "Procidentia" is derived from "procidere" and means "to fall down." Both terms will be used interchangeably in this writing. If the prolapsed portion is still retained above the sphincter the condition is one of invagination as well as prolapse.

This sagging may be limited to the separation of the mucosa from the muscle walls, a condition termed, incomplete prolapse; or all the walls of the bowel may be invaginated into or through a lower portion of the rectum constituting a complete prolapse. When the upper rectum or sigmoid intussuscepts, it may include a fold of the peritoneal wall, a prolapse of that part of the rectum above the pelvic floor may not present at or protrude from the anus, and if it does not appear at the perineum, it can be recognized only by digital or specular examination. This supra-pelvic prolapse accounts for many cases of intestinal stasis and of sigmoid accumulations.

The pathology is the same whether the rectum protrudes or not, although some authors distinguish an internal and an external degree. Incomplete prolapse of the rectum or partial prolapse signifies that the mucous membrane only is protruded while the deeper coats of the bowel retain their proper position, within the pelvis. It is often but an everting or rolling out of the mucous membrane of the bowel part of the rectum.

The term "prolapsus ani" which has been applied to this variety of descent, does not commend itself because it signifies a falling of the anal orifice rather than a protrusion through it. Goodsall and Miles use the term "prolapsus mucosae recti" to distinguish this type of protrusion.

Practically all cases of procidentia recti are the result of neglect or improper treatment of what was in the beginning a simple form of mucous membrane prolapse. The mucosa is attached to the muscular wall of the rectum by a loose network of connective tissue which normally permits a certain degree of mobility of one coat upon the other. If this mobility becomes exaggerated, whether from a general laxity of the tissues, loss of tone of the sphincters, of the absence of fat in the ischio-rectal fossae, an eversion of mucous membrane takes place. If surgical intervention is not instituted at this stage, the next step may be a slipping out of the rectum in its entirety. Therefore, early prophylaxis should always be insisted upon.

Prolapsus recti occurs at all ages. It is especially common in young children, but seldom requires operative treatment. It is seen in middle life more frequently among women because of the pelvic traumatism incident to childbearing, but it also occurs in men. Turtle (1) reports:

A male aged 26 years suffering with a complete procidentia recti of a firm, edematous, egg-shaped mass, the long axis of which was 5 inches and the short 4

inches. Hemorrhoids were present in addition. The history of the case was, that once when a very small child, the rectum came down and had to be replaced by a doctor, but the patient himself had no recollection of ever having had any trouble of this nature until suddenly during the act of defecation, the bowel came down.

Among elderly people it is often their chief infirmity. I believe it is a great mistake to advise any of these patients; even the decrepit and aged, to be satisfied with palliative treatment, which never, at the best, affords much relief, when a safe operation can easily be performed under local anesthesia.

The importance of relieving the easily remedied defects of old age cannot be over-estimated. Many of these neglected cases of rectal prolapse become practically confined to the bed, or at least must assume the recumbent position the greater part of the time, on account of the protrusion which recurs when standing or walking about. Such inactivity is a severe tax upon their vitality and will inevitably lead to an increase in the normal mortality of advanced age.

Partial procidentia is an exaggeration of the physiological eversion which occurs at every normal stool. Ordinarily the loose connective tissue stretches somewhat to facilitate the ejection of the feces and then contracts and retracts. When this areolar tissue does not have this elasticity the mucous membrane protrudes abnormally and is not drawn back again.

In all cases of partial prolapse there is weakened muscular tone and in the aged an absorption of the perirectal body fat and the abnormal mobility of the tissues of the anal canal permits a rolling out of the whole or any portion of the circumference of the gut. If hemorrhoids or neoplasms drag down the gut, a portion only of the wall may be involved, but under other conditions the entire bowel is more uniformly prolapsed.

### Symptoms

The onset of incomplete prolapse is insidious. In the early stages there is but a laxness and redundancy of the mucosa without noticeable pathologic change, sometimes the prolapse can be demonstrated by the patient at stool, or it may require an enema to excite the bearing down. In mild cases the mucous membrane protrudes only during defecation and returns spontaneously or by the patient's manipulation, and remains so until the bowels move next time. Sometimes the whole anal ring seems to be involved when the protrusion is large. At first the mucous membrane is normal in color, but after repeated protrusions it becomes deep red or sometimes scarlet or livid in color, depending upon the condition of the sphincter. It is, however, quite painless. The surface is marked by the intestinal folds which run longitudinally up and down the long axis of the prolapse instead of circularly around it as in the complete variety. Later, when the mass has repeatedly protruded it will become edematous, inflamed and difficult to replace. In old and frequently prolapsed cases the sphincter is relaxed and though the mass may be easily returned, it will not so remain. Ulceration may result from trauma at any time and the mass will be red, bloody and very painful, but



strangulation or sloughing is rare in this incomplete form of prolapse. When only the mucous membrane is prolapsed the tumor is thin, and by digital manipulation is found to be continuous externally with the skin, and internally with the mucous membrane. When this form of prolapse is associated with hemorrhoids or polypus, as frequently occurs in the aged, the mucous membrane will be found sagging between the tumors, and a discharge of blood, mucous and pus will occur with each bowel movement. Hemorrhoids and prolapse are very frequently associated and the prolapse may involve all or only a part of the circumference of the anal opening. It must be remembered that an internal hemorrhoid may be the primary cause of the prolapse, especially a lateral pile, only one side of the bowel coming down. The pathology is that the pile excites the bowel to contraction, and in endeavoring to expel the tumor the mucous membrane is dragged down with it. This mechanical dragging down of the mucous membrane may be caused by any tumor, polypus or a foreign body. In a similar manner increased peristalsis and straining due to intestinal worms, rectal ulcers, dysentery, constipation, proctitis, urethritis, urethral stricture, enlarged prostate, cystitis or vesical stone will develop rectal prolapse.

Another factor tending to exaggerate the prolapse is weakness or paralysis of the anal sphincters. This may result from repeated prolapses. In adults it comes on gradually, as a rule, although it may occur suddenly. The more frequently the bowel protrudes the more stretched and relaxed the parts, and this weakened condition in turn favors future prolapsing. Conditions producing edema of the pelvic tissues such as pregnancy, fecal accumulations and hepatic troubles induce prolapse by allowing a stretching and separating of the connective tissue fibers. Incision of the sphincter, or the trauma of a completely lacerated perineum, or the relaxation resulting from sodomy, by weakening the sphincteric narrowing of the anal outlet are predisposing factors.

One of the most annoying symptoms is a constant feeling of moisture about the anal region. This is due to the increased secretion of mucous from within which is either expelled periodically with the voiding of flatus or dribbles away continuously when protrusion is constantly exposed.

Each time the mucosa is extruded there is a feeling of fullness and burning of the anus. As the protrusion increases in size it is irritated and abraded by friction of opposing body structures or by the clothing and thus smarting and soreness occur. If ulceration supervenes an aching, throbbing pain is suffered which continues as long as the parts remain protruded.

#### Physical Examination

Upon inspection the mucous membrane may be found to prolapse on one side only (unilateral prolapse) or the whole anal circumference may be involved (bilateral prolapse). In the bilateral type a sulcus is found in the anterior and posterior raphe. At these points the mucosa is more firmly attached to the underlying structures.

The incomplete prolapse never protrudes more than two inches and if the tumor is grasped between the finger and the thumb and carefully palpated, the two layers of mucosa entering into the formation of the fold will be found to move freely by inflammatory adhesion.

Upon digital examination the examining finger passes easily into the anal canal thus demonstrating the loss of contractile power of the sphincter from the habitual over stretching.

Complete prolapse of the rectum is differentiated by the difference in the protrusion which is larger, being three to six inches in length, somewhat conical in shape, and having a slit-like aperture directed backward.

External hemorrhoids of the thrombotic variety, are hard, smooth and always separate and distinct tumors which are freely movable.

Internal hemorrhoids may be difficult to differentiate, but prolapse usually involves the entire circumference of the bowel and has a soft, velvety feel, and if carefully examined, a slit-like opening will be found in the lower end through which the finger can be introduced into the bowel.

The age of the patient will be of some assistance, as hemorrhoids and polypi are uncommon in children, and the protrusion is more likely to be prolapse.

#### Complications

As a result of excessive spasms of the sphincter and the trauma of repeated manipulations, the epithelium is abraded resulting in ulcerations, submucous abscesses and fistulae. Sometimes considerable sloughing of the parts may occur.

#### REFERENCES

1. Turtle, W. R. M., *Lancet*, 1920, p. 138.

#### How Controlling One Disease Controls Others

If and when the entire population can have their milk supply safeguarded by efficient pasteurization, as we now have our water supplies safeguarded by effective chlorination, in addition to the other safeguards that modern sanitary science has devised for both water and milk supplies, we will witness the operation of the Mills-Reincke theorem in relation to milk as we have recorded its operation in relation to the purification of water. That is to say, there would not only be a marked reduction in the incidence of typhoid fever, but there would be a lowering of the general death rate from other causes, for it must be remembered that not only the tremendous life hazard to bottle-fed babies, who are fed on raw milk, would be greatly minimized by the pasteurization of milk but that the dissemination of other deadly diseases would also be much curtailed, which now may be and are passed on through raw contaminated milk. In this list might be included bovine tuberculosis, septic sore throat, para-typhoid fever, and occasionally scarlet fever and diphtheria.

#### General Paralysis

In the series of cases reported on by M. M. Kunde, George W. Hall and F. J. Gerty, Chicago (*Journal A. M. A.*, Oct. 13, 1927), each patient received one or two courses of treatment. Each course consists of a series of from eighteen to twenty-three intravenous injections of foreign protein in the form of typhoid combined vaccine (administered every second or third day) sufficient in quantity to produce a chill followed by fever with a fastigium of from 103 to 104 F. (rectally). The vaccine is diluted with physiologic sodium chloride solution, so that each cubic centimeter of the dilution contains 200 million dead. Among the forty-nine cases, no refractory patients were found. In the majority of instances an increment of 100 million dead bacilli per dose is sufficient to elicit the desired effect, so that on the eighteenth treatment the patient receives an intravenous dose of 1,800 million dead bacilli. One patient required 2,300 million bacilli for the eighteenth dose; another on the eighteenth required only 700 million. After a two months' interval, a second course of treatments may be instituted. At this time the same severe reaction can be elicited by a dose of fifty million bacilli as was produced by the initial dose of the first course. The successive increments in dosages necessary for a reaction in the second course are comparable to those of the first course. Seven patients have already received a second course of treatment. These showed very little, if any, clinical improvement at the end of the first course. During the interval, a slight or pronounced improvement in mental symptoms occurred, and in all cases there was an unusual gain in body weight. Mental improvements continue in six of these following the second course. The seventh patient is rapidly deteriorating. In the forty-nine unselected cases thus treated, twenty-one good remissions followed; these patients are restored to their former social conditions or are working at their previous occupations. Eight of the forty-nine are dead. The causes of death were: pneumonia, suicide, delirium tremens, and rapid deterioration. The authors do not advocate the use of this treatment in moribund patients.

## The Rationale of the Newer Medicine

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(Continued from page 246, October issue)

### VII.

The simple function of assimilation, as seen in single cells, ameba or bacteria, has grown to an elaborate digestive process, as found in the high typed cluster of animal cells.

The most elementary form of basic protein is protamin. This is split by bacteria into formative protone and hexone bases. The process is similar to the chemic response that ensues when water and sulphuric acid digest protamin or ptomaines, producing histidin.

Spermin is a soluble crystalline substance, from animal secretion. It has the specific property of stimulating nervous tissue, so as easily to alter organic expression, without, however, producing any apparent pathologic change in structure.

Protein is the most elementary structure of the cell. It differs from other food products through its constant possession of nitrogen, carbon, hydrogen and oxygen. These elements are combined with others, as iron, iodine, phosphorus and sulphur, as the specific need of cells decrees.

Simple and complex proteins differ materially, as required, by the particulate, functional expressions of organic cells. Complex proteins, through conformation to cellular requirements, contain many atoms or electrons. These may be combined in infinite series, making possible the required combinations that constitute the endless series of atomic and molecular elements that enter into the structure of proteins. Virtually as numerous, in estimation, are the nutritive combinations or creations which are capable of conversion into toxic products.

Amino-acid is the basic unit for protein molecules. Two or more amino-acid forms are loosely held in the structure of each cell.

Within certain limits, it is immaterial where bacteria or higher cell types derive a nutritive supply, for, normally, any excess above cell need is converted into waste.

One essential difference existing between bacterial and vertebral cells resides in the elements that are fixed for cell growth. This pertains particularly to the vertebrate cell, which has ascended from primitive to complex form.

The effect of certain elements upon types of vertebrate cells is this contribution of complexity, the trend being to alter the similarity that was formerly more apparent, between the lowly bacteria and the advanced type of protein cell.

A fixation complement retains calcium in the vertebral cell. It represents an induced refractory state, created to effect an objection to the release of lime by the cell, which selects the line of descent wherein calcium gives stability to structural mass.

Lack of calcification in cells adapted to the process is an abnormality, and evidence of recessive tendency. It is due to fault in customary environment, produces pathology, and shows a reversion to the more primitive cell type.

Through fixation, calcium is adapted for evolutionary advancement, building upon the softer, simpler type of cell form. Through ossification, centers of embryonic

cells, functional features of importance are made captive, enlarging the privileges of the growing cluster, and protecting the vertebral form that ensues.

As the cell conserves energy for the maintenance of life and its conformation to adaptive requirements, calcium complies with a need for some element that will permit offensive activity, and afford defensive routing of the vertebral cell, because of environmental perils.

Calcium is fixed in the cell through merits of specific complement. It is an adaptation for the course of cellular transit, which begins with the initial deposit of ionic calcium in the cell, to the stage of fragility in the senile cell, wherein some organic loss has been sustained to occasion the marked disparity between this and preceding states of early resiliency, activity in reparative response, and maturing efficiency. Loss shown in the ageing cell is proportional to a relative increase in certain inorganic elements, but may alone be interpreted as slowly changing complement, which admits disparity in structural states.

Plasmic supply of complement adjusts variable needs in cell life, extending a power in conformity with stages of growth and repair. Certain principles of fixation provide the form of complement that proves to be specific to the functional needs of the cell.

Every phase of the evolving process of the cell, as that from the most simple to the most highly developed and complex functional response, shows this provision of complement. As well, this supply designates a relative normality, a definite but temporary standardization in growth conformity, responsive to the demands of the existing phase of environment. Fixation of cell complement assures cell privilege, in function and in structure. As a specific property, it establishes stability in expression, and harmony in cell association of elements in process of construction, or in the aggregation of units in formation of mass, all being the effect of influences in environment.

The acquisition of faculties, intelligence, sensory impressions, and broadened responses to the exactions of environment, show that physical processes have attained to those certain standards which admit of expression through these attributes, which are cellular functions, and, in being specific, definite in specialization.

Parhon of Jassy and M. Goldstein of Bucharest speak of "memory fixation," significant of a physical condition having been activated for retention of sensory impression. A selective complement must exist for the expression of so subtle a property as thought, within material structure.

Powers of fixation for protecting function are of slow accession to the organic cell. The provision for attributes that now exist, and for a succession of others to follow, would only ensue as rapidly as cells could develop the use of, and protect, the power that reposes in the gifted complement.

Redfield said, "Disease is not a single item, it is as complex as the song of a bird, and a resistance to one of these diseases must be as complex as the disease it is to resist." Redfield showed that immunity can only occur in the presence of some cause for its creation.



## VIII.

Certain anatomical forms and processes, possessed by the more primitive or ancestral type of mankind, are now absent from, modified, or rendered obsolete in the existing type, to prove the merits of cellular evolution.

Alteration of the pH ion concentration of the blood, producing variable degrees of "acidosis," may result from inducing emotional states as well as from an introduction of alien proteid.

"Acidosis" means cell trauma. It is but a matter of severity in degree, from insignificant to severe cellular change, or disturbance of cell equilibrium.

In "acidosis," some change occurs in complement, with altered fixation in the cell. Impairment of immunizing processes occurs, and the disturbance is directed toward an injury to functional activity, with consequent lowering of cellular defense.

The establishment of natural immunity may require many generations of effort. The Indian who gorges on decomposing flesh, with impunity, may quickly succumb to diseases for which the white man has an earned immunity. The latter, in turn, has little protection against the toxicity which is present in the Indian's diet. The Negro has weak cell fixation against keloid, and the Jew, presumably, shows weakened fixation against the onset of diabetes, as a persisting evidence of early or embryonic fault in the midst of otherwise advanced structure, due to some error in fixation complement of the cell, and distinct from the real infective cause for diabetes.

Every tribe of mankind shows some degree of imperfection in protective measures, which may be attributed to certain features which occur from change in abode, or other alteration of an environment, within which custom has adapted a cellular growth.

Cronk suggests that vegetarians and Jews are less disposed to disease in general, through the habit of adhering to well balanced diets, with less acidity of the cell occurring. Cronk also suggests that, through faulty dietary measures, slow changes may occur over the years of cell life, finally creating degeneration of the cell, manifested as an "acidosis," showing especially after the fortieth year.

Occurrence at so mature an age corresponds with the period of life when thyroidal activity shows material depression. Decreased metabolic activity is apparent in the advent of physical change, with tendency to adiposity and trend toward degenerative alteration, with other evidence of senescence of cells.

An adjustment to the effects of temperature tends to stabilize the chemic processes and physical responses which are related to the plasmic support of the cell. Excess of heat stimulates metabolism, cell overload occurs and accumulation of waste follows. Standards of fixation occur through the development of complement for adjustment of the cell to the disturbing effects resulting from variation in temperature. This reaction is not as responsive to control as in the maturer years of life. Immature cells show a lack of metabolic balance, a ready accession of pyrexia, with marked oscillation upon slight disturbance, as in the febrile registration of children, who are undergoing an adaptation, in developing complement, through continual exposure to proteid structure of varying composition, and who are earning by the process immunities to disturbances of allergy, and acquiring a defense to the attacks of bacteria.

The cell has earned a native insulation, a protective electro-motive force, or potential. Unusual thermic variation, as shown above or below the ordinary limits to which the cell is adapted, disturbs cell insulation, elec-

tric diffusion results and cell metabolism is altered.

Metabolic activity is a constant necessity upon the part of the cell. Life continuance demands a metabolic rate that is conformable to the thermic environment of the cell.

Any excess in metabolic rate, as in pyrexia, alters cell potential. Either minimal effects of allergy, or prolonged, unnoticeable fever, or even brief hyper-pyrexia, prove sufficient to create trauma of cells.

To minimize activity of the cell, as in conserving energy, in sparing function and in preventing "acidosis," metabolism must be restrained to a standard that proves most favorable for normal efficiency and cellular stability.

Control of heat is a function of the cell. It is a governing influence in response to environment. As a cellular requirement, when kept within bounds, it proves to be a normal reflex. It is stimulated to activity by conditions which result in distinct allergic attacks, when not immediately controlled.

"Effective temperature" shows that metabolism governs systematic response to proteid attack, as an adaptive reflex for defense. The cell adjusts to toleration of external effects, such as are shown in temperature, humidity and movement of air. An automatic, thermostatic control exists in metabolism which controls the effects of external heat, insofar as the cell can be adapted through the protection which reposes in the metabolic reflex.

When the external temperature is 65° F., metabolism responds, heat generation ensues, maintaining the cell environment, or plasmic temperature, to the point of normality, or best efficiency. Raising external temperature from 65° to 85° occasions no cell strain, in the form of excessive metabolism, to protect the cell. With environmenting temperature at 90°, metabolism undergoes further stimulation for heat dispersion and increased perspiration, through cell activity and evaporation. With external heat raised to 105° or more, metabolism rises still more for greater dispersion of external heat, or cooling, the cellular metabolism being almost double, at 105°, to what is shown with an external temperature of 85°.

When metabolic stimulation fails to dissipate heat, physiologic fever occurs, through retention of metabolic waste in the cell, cell trauma which is created, and cell strain or altered potential that is produced.

A minimal basal heat production, for the human cell, is fixed at 98.4°, and the normality of 98.6° as standard. For the human cell, shows that a very slight, but constant metabolic activity occurs, for preserving the point above the minimal index of 98.4° F. This automatic reflex and thermostatic control suffers disturbance in trauma of the organic cells.

The normal metabolic rate is disturbed to variable degree, dependent upon the severity of the provoking cause. The variation may be slight, as shown from the minimal, non-septic and virtually harmless effects which result from absorption of exudate in clean surgery, to the violence that ensues in the hyperpyretic conditions of infection.

When failure occurs in the functional co-ordination of cells for the maintenance of defensive metabolism, cell potential lowers, resistance to toxic effect lessens, cellular over-strain occurs, and the proteid structure of the cell undergoes degeneration in the form of "acidosis", or accumulation of toxic waste.

## IX.

In addition to showing that the presence of disease does not alter laws that govern health, Vaughn revealed that parenteral digestion of proteid creates toxicity,



causes cell trauma, and reflects the condition which is designated as "ill health."

Parenteral digestion is the process of splitting proteid, with liberation of nucleic acid from the affected cell. There is an identity in the ensuing symptoms, showing that allergy has little regard for either the form or source of proteid supply.

Toxic products stimulate the cell to function, with the production of antibodies, created for destroying antigen.

When toxicity occurs, the affected cells are revealing a sensitization to changes which have occurred through digestive changes in protein, and thus depict an allergic manifestation. These changes are shown in the occurrence of areas of degeneration, either in single and few cells, or in filds of wider distribution. Dependent upon the deposit or selection of degenerative exploitation, organic function shows disturbance, with classification through the application of diagnostic names, designating the area under attack. In the heart muscle, damage occurs as "myocardial," in kidney cells, the term "nephritis" attends, in the hepatic cells, damage earns such a name as "cirrhosis."

Cell alteration, remaining as evidence of degeneration, persists throughout life as some degree of scarring or evidence of structural change. The minimal or grosser amount of this deposit creates a corresponding effect upon functional expression, or disturbance of organic response. It is the evidence of a former cellular trauma, which persists after the provoking toxicity is abated or the infective agent has been removed.

In the instance of arteriosclerosis, as caused by the deposit of precipitins, which have been primarily created for combating the toxicity of protein change, localized allergy and sensitization show the sites for structural change.

Hanzlik found that allergy occurs through an alteration of the function of cells, altered fixation of blood proteins, and local disturbances.

In allergy, the cell undergoes variable change. Local or distant effects follow the entrance of proteid by ingestion or by parenteral routes of introduction. Allergy or the presence of toxicity attacks the fixation method of organic cells. Two allergic toxins have thus far been isolated, histamin and peptone.

The human cell possesses the native property of removing most of the effects of toxicity arising in heterologous proteins, by the process that is called "desensitization." Through possession of this refractory power, the human cell represents a more aggressive domination over and a more flexible response to the effects of environment, as an adaptability, than other forms of organic life.

Of the entire cellular species, and according to present standards of existence, the advanced human cell is the most fit for surviving adverse influences in environment.

Confined within the limitations imposed by environment, the vertebral structure of man has been erected, through conformation to the active influences which have operated to guide its course.

The attainment of this privileged eminence by the human cell has been through the factor of exercising functional privileges, called faculties.

Within the basic fabric of this development there has been expressed the influence of two separate, and yet co-operating units, called voluntary and involuntary.

The involuntary muscles, as found in the uterus and intestine, differ in marked particulars from other muscle fibres of the involuntary group, through a possession of defensive properties which are directed to the end of minimizing the effects of allergic attack.

This specific property, which is most highly developed in the human species, in the form of immunizing processes, developed through evolutionary progress of organic structure. Instituted for the generation and protection of the embryo, a matrix of activated cells guards the uterine function. This is the fundamental requirement for preserving the species and protecting life.

A general law applies to traumatized cells, which become alien through injury, and are rejected by the matrix, which attempts standardization in cellular stability.

A specific immunity protects intestinal villi, which provide nutrition for the organic cell, through the period of vital capacity.

One effect of allergy is to make cells permeable. Loss of defensive properties occurs in the leakage of cell complement, as shown in the alteration of tissue properties, or function, synonymous with change in cell proteid.

Conditions of extravasation, edema, emphysema and cell strain, whether the result of acute change or evidence of terminal alteration of protein, are expressions of allergy, and indicate degenerative change in cells.

Single or repeated injections of protein may produce late changes in organic cells. This may show in minor or extensive alteration of cell substance, as in lesions of the heart, liver, kidneys, nerves, glands or other organic structure.

Effects of parenteral digestion, with resulting proteid change, are always identical in nature, and the result is simply one of intensity in the traumatic disturbance suffered by the cell.

Every occurrence of parenteral entrance, with the consequent digestion of the proteid introduced, produces some degree of functional disturbance. Most serious effects ensue upon the entrance of proteids which belong to the closed, rather than to the benzene series of proteid structure.

A portion of proteid is soluble in absolute alcohol or in two per cent potassium hydrate solution. When this is introduced by parenteral route, it produces a constant reaction in the organism. A wholly different reaction follows the injection of that portion of the proteid which is not soluble in alcohol, or in the potassium hydrate solution. The latter protein portion belongs to the second proteid group, which confers individuality or specificity upon the proteid combination. The provision of a certain complementary property is here shown to confer a different functional privilege than is contained within the toxic, or alcoholic-soluble portion of the molecule.

The severe reactions which follow the attack by proteids reveal the limited protection that resides in organic cells for controlling toxic or infective entrance.

Cells may never provide immunity for certain toxic attacks. Infected cells may disintegrate so rapidly under attack, with release of such large quantities of archon, as to overwhelm the organism before sufficient defensive complement can be produced to preserve function and perpetuate existence. It is such conditions as these that are so successfully combated by antitoxins, which release large amounts of antibodies, in remedial treatment.

Parenteral digestion of toxic proteid, altering cell complement, institutes a process which, if uncontrolled, results in such cell trauma that subsequent necrosis occurs, with total destruction of structural cells affected. Toxic conditions, from cell death, may create intensive allergic effects at distant points, as is shown, for instance, in cutaneous burns of severe degree, with subsequent lesions from allergy, in the kidney or intestine, which marshall for review the far-reaching proteid effects from parenteral entrance of autogenous proteid within the organism.

## X.

Abderhalden found digestive proteids in the blood of man, and Herb found a lipid, related to fat, in treponema. The blood stream of man may digest invading treponema, through means of a ferment which is present in cell protoplasm, but absent from blood serum. Here is one of the vital differences that distinguishes plasma and serum. Plasma creates immunity through a provision of complement, which, in turn, is required for the activation of all ferments.

The lipid of treponema can only be digested in human blood, by means of lipase, or some other fat splitting ferment contained in phagocytes.

Blood vessel endothelium digests lipoids by the activity of some ferment that is derived from the liver or spleen, especially the liver. This method of disposition of treponema offers a solution for the production of arteriosclerosis, so common in leucic infection as an aortitis, and endothelial changes in minute arterioles, where, within the vessel wall, spirochetes are found retained, with coincidental effects, as fibrotic deposit shown in the mesial layer of the blood vessels.

Allergin is the hypothetic substance which is presumed to sensitize. After sensitization occurs, allergin is, presumably, antagonized by sensibilin. The latter substance is supposed to cause the cell to respond to complement. The toxic nuclear substance, or the archon of proteid, must unite with amboceptor and complement, before antigen can be destroyed.

The more highly a cell is developed, the more complex it becomes, and the greater the potential of the complement that is furnished for cell protection.

Upon reintroduction, the organic cell may act as an antigen among its own kind, to undergo lysis by solution through the combination that forms with foreign amboceptor and domestic complement. The antibodies that are created for protection against antigenic activity of autogenous cells are called "isocytolysins."

Production of immunity is based upon the combination of antigen, amboceptor and complement. This process occurs in all organic forms, regardless of the status of cellular development or the perfection of function.

The constant oscillation of the leucocyte count is one of the unstable conditions of the human organism. Leucocytic activity expresses a constant effort to harmonize organic activities. Certain catalysts, such as oxidase, peri-oxidase, calcalase, hemoglobin, and other recognizable elements, such as phagocytic enzymes, stabilize the defensive measure of the plasma. Leucocytic functions are varied and many, as for example, oxidation, reduction by ferments, production of antibody and dilution and destruction of antigen, with innumerable other activities, which are specific to the various types of blood cells, grouped under the term of leucocytes.

The available agents for artificial stimulation of organic cells, such as leucocytes, are innumerable. By means of these agents, cellular activity may be increased to a certain point, beyond which over-correction occurs, with an ensuing trauma to the cells involved.

Non-specific therapy creates complement, which antagonizes antigen and prevents trauma of cells.

Specific treatment disturbs the fixation state of cells. The definite object in this form of treatment is the induction of a reaction, such as occurs in the chemical effects that attend the rearrangement of cellular constituents, with alteration of cell potential. For instance, treatment with organic extracts may be of a specific nature, as in the administration of pituitrin, increasing the function of renal tubules. This neutralizes toxicity through the diuresis that is produced. For success, the

methods requires that the tubules have insufficient time to absorb the waste that has been excreted through the activities of the glomeruli.

Tubular function depends upon a fixation, for reabsorption, of valuable organic elements previously released, and excreted by the glomeruli as a method of disposing of waste.

Failure of the tubules to reabsorb and fix elements of value reflects a loss of definite and specific tubular complement, recognizable as due to the effects of cell trauma, toxicity, and allergy, localized or reflected from a distance.

The activation in elements contained in Ringer's and Fisher's solutions carry a potential, as an ionic activity, stimulating the cells of renal tubules, replacing non-active elements, restoring potential to depleted cells, and allowing the reposition of some complement to effect the dispersal of allergy. These benefits minimize cell trauma, such as occurs in conditions called "acidosis, uremia, eclampsia," all evidence of infection or toxic state, mirroring loss of cell insulation, potential and effects of allergy.

In substance, the effect of the solutions is not unlike the results of using lime water in milk-feeding problems, where gastric acid fixes the lime, to spare the activated calcium in the milk.

Release of metabolic products, through the use of such solutions as Fisher's or Ringer's, is due to the effect of activation, to complement, or to de-fixation or freeing of waste products from the cell, synonymous with rendering toxic material inactive.

## XI

Ammonia occurs in the blood in rather constant ratio in health. Amphoteric balance regulates acid and alkali, constantly adjusted, normally, to the intake. The effect of acid upon blood buffer depends upon its source, p H ion concentration deriving more from an endogenous than from an exogenous acid supply. When the blood accumulation of acid does not exceed the buffer supply, p H ion concentration remains undisturbed.

In so-called "acidosis," altered potential of cells, from trauma, increases p H ion concentration, disturbance of the acid base equilibrium also occurs in "alkalosis," as from excessive vomiting or gastric lavage.

A specific complement is furnished for uniting acid, alkali and the amphoteric base of proteid structure, in normal states of the organism, without any alteration of the p H ion concentration occurring.

Renal cells free complement from protoplasm, with liberation of ammonia as a salt, and acid, either alone or combined with a base, as acid sodium phosphate alone or combined with alkali, as ammonia. The excretion occurs outward, after the manner of dialysis.

The entire process is instituted by allergic effect. It has been noted that in the severer grades of allergy permeable states of the cells occur, as emphysema or edema. This extravasation ensues at any point where cell pressure may be relieved, when waste accumulation ensues upon cellular trauma, and customary exists through intra-cellular pressure have been choked.

Function is stimulated by the minimal or initial changes that lead onward to production of allergy, resulting in metabolic activity or combustion, as a defensive measure of the cell. The usual method of waste elimination is followed, that of excretion, the method being an extravasation or dialysis through the line of least resistance, outward from the cell cluster, and in the kidneys it is toward the tubule or a negative pressure. With an increase in the allergic effect, function



progressively fails, co-incident with the degree of cell trauma, until really pathologic states occur.

Through this method of combating allergic effects, one may readily perceive a why and wherefore concerning blood pressure elevations, covering such states as are included under "potential" blood-pressure, or "essential" blood-pressure.

The process instituted for the disposal of useless, acidic or proteid end-products, first and last, is instituted by allergic effect and variable from the institution of normal function to the state of an overwhelming of the organism through cellular retention in products of metabolism, or under-oxidized substances, which so plainly speak of induction of allergy within the overburdened cell.

The organic cell builds up proteid with an activating complement, which is supplied from the plasma. This unites either acid, alkali, or both, with some proteid form, with a later release of  $\text{CO}_2$  and  $\text{NH}_3$ . The cell complement that is provided may bind these products in the form of urea, and at an identical comment that the circulation elsewhere carries on a separate process, as in the transfer of  $\text{CO}_2$  for exchange with oxygen, by some complement that occurs for effecting alveolar transfer in altered potentials.

Simplicity is manifest in the temporary fixation that transfers  $\text{CO}_2$  from the cell of its production to the pulmonary outlet.  $\text{CO}_2$  follows a definite routine of activity in the cellular organism. Upon entrance of oxygen, through respiration, fixation occurs through complement. This carries the element within the blood stream to its final release for combustion by metabolic exchange, when definite union of oxygen and carbon occurs, as in  $\text{CO}_2$ . This combination is then conducted to be wasted through the pulmonary exit, or elsewhere, as to the kidney or liver, to be more closely organized into urea, the result of synthetic selection.

This cycle of engagement, alteration and release, through changing provisions in complement, is the extension of the respiratory process, carried to distant structure, completing the essential requirement for activation of cells.

Twenty-five years ago, Sajous depicted a similar process, occurring through the principle of "adrenoxin," which he deemed was the element which united oxygen and the iron proteid of the blood, for conveyance to and activation of cells. The function of the alveolar cells is essentially concerned with the presence of  $\text{CO}_2$  in the blood. Allergic states show that when "acidosis" occurs and emphysema results, a permeable state of the alveolar wall exists, the localized effects showing as an edema.

The normal process, function and exchange of oxygen in the alveolar cell, with discharge of  $\text{CO}_2$  by the same process, is occasioned by incipient toxicosis, an allergic effect. This provides an effect of stimulating an immunization against the occurrence of "acidosis," and reflects the requirement of adaptation to environment, the occurrence of function to protect against impending injury.

Held by its complement,  $\text{CO}_2$  stimulates the immunizing process, the effect being in the form of a respiratory reflex or reaction, its purpose being to the end of minimizing toxic products of changing proteid.

After a pattern of union of toxic nucleus, as an antigen, of amboceptor conceived as complement, an antibody embodied in oxygen, so the normal respiratory exchange occurs, for the prevention of allergy.

With excess retention of  $\text{CO}_2$  in organic structure, "acidosis" results. An insufficient amount or defective

supply of oxygen is quite apparent, being due to insufficient complement provided for saturation of oxygen in the blood, or to complement being bound through some fault in defense, and showing that this form of immunization against the effects of "acidosis," is undetermined.

One may say definitely, "acidosis" means defective supply of, or non-engagement of a proper complement, the consequence being an insufficient combustion or oxidation. This is defective metabolism, and shows that the resources in oxygen fail through the element being bound or fixed in some unavailable form, and, for that reason, ineffective for cell requirement.

In order to express an activity, oxygen must be available in a nascent state, which means that it must exist either chemically free or capable of ready release to some avid demand, wherein more affinitive requirement is revealed.

All this occurs in complemental activity, wherein oxygen expresses its two-fold power, an unimpaired liberty for union in conformity with laws of valence. By value of its property for stimulating combustion, oxygen destroys toxicity in organic cells, an activity which can only ensue upon the release of some engaging or holding complement.

With the bivalent property of oxygen engaged, as when the element is rendered incompetent by the process of fixation, or with the other elements with which oxygen should engage for furtherance of function bound or incompetent, then oxygen is unavailable for cell use, and, to all intents and purposes, it has been rendered inert.

This is the condition, relatively, when oxygen is combined in  $\text{CO}_2$ , it then being unavailable, save as it may exert an effect in its final, desperate activity for rendering  $\text{NH}_3$ , or similar combinations, innocuous, as in formation of urea.

## XII

Activity of the liver is not dependent upon the presence of the entire gland, for large portions of the organ may be removed without decrease of functional activity of the remaining portion.

Disturbance of hepatic function, to the extent of lowering the alkali reserve of the blood, occurs without evidence of injury being found in liver structure. This confirms the evidence that functional alteration only attends disturbance of a governing complement, this being without regard for locality or seeming conditions of organic involvement.

Before calcium can be absorbed from the intestine, bile must be present. This shows that hepatic activity is of decisive influence in providing complement, through biliary supply, and the erection of the vertebral cell requires cognizance of this influence.

Verse fed rabbits upon fat and cholesterol, with retention of fat occurring in the blood in consequence, and the production of arteriosclerotic deposit, an increased blood pressure usually accompanying the experimental findings. The increase of cholesterol percentage in the blood is of significance in the occurrence of arteriosclerosis, and the association of calcification with fibrotic deposit in blood vessels in atheroma, is associated with other disposal of calcium in the organic structure, such as occurs in the formation of mineral deposits, tubercles, phleboliths, calculi and ossifications.

Progressive changes in degeneration may be frequently interrupted. These occur with the parenchymal digestion of proteid, especially in sensitized cells, in accordance with constant or interrupted entrance of the



provoking substance. The cause lies in the disturbance of complement which, usually sufficing for waste removal and detoxication of the proteid nucleus, is rendered defective or inactivated.

Hydrolase is required for controlling proteid in the enteric canal. Prolonged or excessive activity of hydrolase is associated with disturbance of the cholesterol balance.

The active association of cholesterol and calcium confirms the dependence of the vertebral cell upon activity of the liver, for the growth of this type of cell. The activation of calcium, as contributed through the influence residing in cholesterol, shows that a potential is carried in lipoids. This is expressed in some fundamental property that serves to stabilize the nerve centers, and which is intimately related to the control of infection.

The supply of lipid to the blood is limited by the supply of bile to the intestine. Depletion of the bile decreases the production of mucinase, with ensuing diminishment in immunity for the enteric membrane. Increase in decomposition products and increases in fermentation occurs as a natural result. Under these conditions, bacteria more readily colonize upon the intestinal villi and break down defensive measures. Invasion of the enteric mucosa more readily occurs. Locally, the condition earns the name of "catarrh", which may, at times, create far-reaching effects in distant organs, or predicate an infective field for the general system.

Lipoids invest organic cells with defensive properties which are directed to control of bacterial invasion or proteid toxicity. Lipoids are active in furthering the benefits derived from complement. Through an antagonism to toxicity, lipoids prove instrumental in balancing cellular activity and in promoting functional response and aggression.

The integrity of the nervous system depends upon a stabilizing property that is contained within certain elements. These show an affinity for an activating media, in order to energize certain organic combinations that are markedly displayed in the fabric of blood fats.

Grigaut found that fats and lipoids originate in all living protoplasm. While the lungs destroy a portion of the lipid circulating in the blood, the formation of lipid in the organic cell corresponds to the stages of oxidation of certain compounds in the blood stream. Fatty compounds undergo combustion through the supply of oxygen, and the disposal of lipoids can only occur likewise.

The alveolar cells discharge  $\text{CO}_2$  and replace it with oxygen. This process is acutely concerned in the construction and activity of lipoids, and continuation of the process requires the presence of cholesterol in the blood stream. Herein, the influence of cholesterol is in response to a requirement of the organic cell for potential, which is derived from a field of radio-activity, from sun sources or light transmission.

The organic cell has been built upon definite premises, being the reflection of radio-active principles, developed within certain conditions, from certain elements limited to the elemental supply that is available, and activated within the environs of certain adaptable requirements. The organic cell of today continues the process which originated in the initial impulse, as an energy made effective on this planet. This exists in the ionic activity which we term, among other appellations, "electro-potential," or the difference in the potential we see originating in the proton and electron disassociation.

The necessity for respiration by use of oxygen was a matter of institution of combustion, or of energetic display. It was the effect of an instigating influence, with-

in an inaugurating environment. It is the mode by which life continuance occurs, and the manner by which, basically, there has been constituted the defensive properties of the organic cell. It indicates the chemic activity that is necessary to activate an elastic and responsive substance, such as cholesterol, through the combination of nascent or free oxygen which has been activated by radio-active power, and one or more other elements.

In the combustion of structure, as illustrated by phosphorized fat, there is expressed the physical requirements of the vertebral cell. This activity is dependent upon the engagement of oxygen, upon metabolism, and upon the influences of properties which reside in the elements of structure. As stated quite early in this series, this accords with valence, which expresses a direct influence in the rearrangement of ions into atoms, and their association as molecules.

*(To be continued)*

#### Origin of the Living Organism

*(Concluded from page 250)*

by the organism was the property of locomotion. Obviously an organism capable of propelling itself into new and richer regions of environal energy would thrive much better than if it were constrained to a stationary existence. This question of the origin and the mechanism of self-propulsion will be treated at some length in a later issue of this magazine.

In recapitulation, we have taken the liberty to point out how the entire environment, from the largest masses right down to the electron, seems always to be in some state of activity. In the environal back-ground this activity appears to be very generalized and promiscuous. Yet it is capable of assuming a high degree of order and inter-relation, particularly in association with those complex, "water-bound" aggregations which we call living organisms. Organization of these follows, very likely, the general principle of variation which we see on every hand about us. Speculation as to the ultimate origin of origins is far beyond the scope of our discussion. We need but accept with gratitude and grace the marvelous panoramas we are privileged to behold at none too frequent intervals.

We have pointed out how the abundant earth waters served as the free, open forum wherein all the energized particle-entities of the primordial environment might exercise their "social" inclinations. Just why the earth waters should play this particular rôle we do not know. About all we could do at this time is to venture a fair guess that, of all things in the gamut, the water molecule possesses the optimum combination of tactile energy, dispersive power and "synthesizing ability" in the form of surface tension.

We have taken the further liberty to suggest that the living organism is not unlike a vast, densely-packed, community in a high state of cooperative activity and culture. By so regarding it we should be able the better to understand the process of life origin and progression. As a beginning in this direction we have ventured to explain certain structural and functional characteristics of the simple cell. Thus, from our analysis of the life process it would appear that the living organism grows from the inside out, as it were. If this is so, then it would seem further that progress of a particular organism would depend upon the extent to which this internal growth kept ahead of external growth. Maybe this is the fundamental law of progress we have been seeking for so long. In any event it is the writer's hope that the establishment of certain basic principles of this kind may in time enable us really to comprehend some of the things which have baffled the human understanding from the earliest times.

# Endocarditis and Meningitis (Pneumococcic)

## Report of Cases and Review of Literature

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(Concluded from page 244, October issue)

### Endocarditis

Preble, up to 1904, found 126 instances of endocarditis among 11,243 cases of pneumonia, and among 1,775 autopsies (pneumonia cases), endocarditis was found in 86, or 4.28 per cent.

Menetrier (*Bull. et mem. Soc. med. f. hop. de Par.*, XLVIII, 679, 1919) found in 22 cases of pneumococcus endocarditis, five with acute vegetations on the scars of old lesions.

Locke believes that type I pneumococcus is particularly prone to be concerned in producing pneumococcus endocarditis. He reviews the literature very thoroughly, referring to the reports by Preble, Thomas and O'Hara, Clough, Palmer, Wadsworth, Menetrier, Netter, Wells and others.

Carslaw's (*Trans. Glasg. Path. & Clin. Soc.* 7:244, 1898-1899) case, was a young man 31 years old who had a right pneumonia-staphylococcus pyogenes aureus found on culture from the right lung, heart and kidneys.

### Meningitis

B. S. Levinson (*Illinois Med. Jour.*, 32:270, 1917) reports one recovery in 17 cases of pneumococcic meningitis under his care, and found twenty-one recovered cases in 102 reported to the literature.

Jacob and Wendt (*Ztschr. f. Klin. Med.*, 103:107, March 3, 1926), have used turpentine abscesses successfully in a number of very severe cases of sepsis and purulent meningitis. They inject 2 c.c. turpentine, subcutaneously in the outer side of the thigh. Of course, in their five cases of meningitis, besides the turpentine abscesses, they performed lumbar punctures and used specific intradural injections. They are certain that in several cases, the abscesses saved the patient's life.

Kennedy's nine cases of pneumococcal meningitis all died (*Brit. Med. Jour.* II:481, 1917), seven of the cases came to autopsy. Five were primary and four secondary cases of meningitis. They were all treated by repeated lumbar puncture. He states even in the presence of pneumonia, meningitis is not necessarily pneumococcal. He concludes that the prognosis of pneumococcal meningitis is grave and it is doubtful if severe cases recover. He refers to recoveries reported by Broadbent, Netter, Shand, and Carnovan Brown.

Broadbent (*Brit. Med. Jour.* II:586, 1916) reported recoveries from pneumococcic meningitis following the use of Panes antipneumococcic serum by mouth and injection, urotropin, and lumbar puncture.

Mitchell and Reilly's case of meningococcus meningitis in an infant four months old recovered following the introduction of serum by cistern puncture. (*Am. Jour. Med. Sci.* 164:66-71, 1922).

King's fatal case of pneumococcal meningitis originat-

ing from an occult sinusitis occurred in a woman, aged 36 years, a case of dementia paranoides. Smears showed pneumococci. (*Lancet*, 211:545, Sept. 11, 1926).

Anderson's case in a boy aged 9 years, proved to be a case of serous meningitis, not tuberculous meningitis, and recovered after repeated lumbar puncture. (*Brit. Med. Jour.* 3413:943, June 5, 1926).

Douthwaite (*Lancet*, I, 1036, May 29, 1926) reports a case of pneumococcal meningitis in a girl aged 15, who recovered following puncture of the cisternal magna and five lumbar punctures and the use of Pasteur anti-pneumococcic serum.

E. Watson-Williams (University of Bristol), emphasizes the advisability of considering aural operation at an early stage in every case of meningitis associated with otorrhoea.

Ayer (*N. Y. State Jour. Med.* Vol. 24, March 21, 1924) discusses the various methods for drainage and irrigation of the subarachnoid space mentioning ventricle puncture which was first brought into prominence by Cushing and Sladen in 1908 and which has unquestionably saved a number of lives. Cortical subarachnoid puncture employed for the introduction of serum and by Eagleton for irrigation, when combined with a puncture at another locus of the subarachnoid space. Drainage of the cisterna magna which was conceived in 1912 by Haynes and Kopetzky and again revived in 1917 by Anton and Schmieden and Schmieden and Scheele and which, when combined with lumbar puncture below, offers opportunity to irrigate the meninges before blocking has occurred. Beriel's sphenoidal puncture of the chiasmatic cistern (employed by Beriel and Eskuchen), cervical and thoracic puncture of the spinal subarachnoid space has, according to Ayer, had limited use in Germany and in France.

Other instances of recovery from pneumococcic meningitis are reported by: Peterman (1924), Cumming (1912), Rolly (1911), Sanders, Lamar (5 cases), Cupler, Royster (2 cases), Parkinson, Schilleau and Pasquer, Steinforth; Neal mentions 24 cases recovered (from the literature) in her article on pneumococcic meningitis in Tice Practice of Medicine (p. 264 Vol. X.); Savy and Gate (2 cases); A. S. Simpson (1927), E. Cautley ("Diseases of Children"), Rieder (1924); Aufrecht (1902) 3 cases; Paiseau and Alajouanine (1923), Jeandel (1923), Wieder's (1924) case of apparent cure, eventually proved fatal. E. Portur Pereya (1924) reported a protracted case of pneumococcic meningitis.

Rieder's case was cured by repeated lumbar puncture alone.

Jeandel's patient recovered following the use of serotherapy.

Paisseau and Alajouanine's case of recovery, from pneumococcus meningitis had acute delirium and double pneumonia.

Blechmann (1921), reported a case of pneumococcal meningitis with external hydrocephalus, in which was used injection of antiserum through fontanelle and into subarachnoid space.

Schulthess (1921) reported two cases of recovery from purulent meningitis.

Underwood's (1921) patient, a boy aged 8 years, recovered from meningococcal meningitis after 21 spinal punctures and the use of 570 c.c. serum intravenously and intraspinally; and vaccine (600,000,000.)

Lortat-Jacob and Grivot (1920), cured a case of staphylococcus meningitis with vaccine therapy.

D. Van der Kooi (1921) reported a case of pneumococcus meningitis with apoplectic onset.

Muhsam (1924) reported on pneumococcus meningitis.

Dabney and Graves's (1922) case, a girl 8 years old, ended fatally.

Bickel (1922) reported a case of primary fulminating pneumococcus meningitis.

Käding (*Med. Klinik* 16; vjg, Sept. 26, 1920) reported several cases of suppurative and epidemic meningitis with recovery.

Hartman (1921) used vaccine in suppurative meningitis.

Lamar used a mixture of sodium oleate, immune pneumococcus serum and boric acid. He had five recoveries. Lamar collected 13 cases of recovery from pneumococcus meningitis, in 10 of which lumbar punctures alone were used, and in 3, pneumococcal serum was given.

Josephine B. Neal (Chapt. XV, Vol. X, *Tice Practice of Medicine*, p. 255) found 66 cases of pneumococcus meningitis in a series of 1259 cases of meningitis. Of these 66 cases, 42 occurred between January and June. Neal mentions the fact that she noticed very high temperature (107 F. or over) in 2 or 3 cases of pneumococcus meningitis, a day or two before death. In Neal's series of pneumococcal meningitis, Type I pneumococcus was found in 11 cases, Type II pneumococcus in 20 cases, Type III in 8 cases, Group IV in 23 cases.

Holt and Howland (p. 718, 8th Ed.) state that pneumococcal meningitis occurs more frequently in infants than in older children, usually in very young infants—over half of their cases were seen in patients under six (6) months of age.

Savy and Gate reported 2 cases that recovered with lumbar puncture alone.

Schilleau and Pasquer's patient recovered after intraspinal injections of electragol.

Sander's patient recovered following the use of autogenous serum.

Simpson's patient (*Lancet* I, 390,391, Feb. 19, 1927), a boy aged 5 years (diagnosed as primary pneumococcal meningitis), was treated at the Belgrave Hospital for Children (July, 1926)—The treatment consisted of antimeningococcal serum 25 c.c.; polyvalent antipneumococcal serum 45 c.c. and lumbar punctures. Pneumococci (not typed) were found in direct smears, and cultivated. The boy recovered from a right hemiplegia and an aphasia. He was confined in the hospital from July 4, 1926, to September 19, 1926, when he "walked out."

Cautley's patient (primary pneumococcal meningitis), was a male child, 9 months old; diagnosed by lumbar puncture; recovered, but no serum treatment was used.

Griffith and Mitchell (p. 609, Vol II, Second Ed) state that pneumococcus meningitis is perhaps the most common variety of purulent meningitis next to that due to the diplococcus intracellularis (tuberculous meningitis, giving a non-purulent cerebro-spinal fluid is not

included). They mention 6 cases of pneumococcal meningitis in the Children's Hospital of Phila. of 119 cases of meningitis of all sorts during a period of 5 years. Griffith reports 2 fatal cases of pneumococcal meningitis in infants (male 8 mos. old and female 10 mos. old) (Vol. II, p. 609).

Vialard and Dorleguy treated walled-off meningococcal meningitis by intraventricular and basilar injections of antimeningococcal serum, after trephine puncture.

Acuna and Casaubon reported 6 cases of pneumococcus meningitis in Children (*Rev. Asoc. Med. Argent.* 37: 105-117, June-Dec., 1924).

Councilman believes that the frequency of pneumococcus meningitis is greatly overestimated, especially secondary to pneumonia.

Leibermeister and Oseki reported cases of pneumococcal meningitis without symptoms.

Henry T. Chickering (*Billings-Percheimer*, Vol. II, p. 797) says he "has never seen a meningitis due to the pneumococcus, staphylococcus, streptococcus, or influenza bacillus recover." "That complicating meningitis in pneumonia due to Type I pneumococcus has not been benefited by the use of Type I antipneumococcus serum, whether used intravenously, intraspinally, or intrathecally."

Cupler's patient recovered after 4 lumbar punctures.

Cumming's patient recovered after intraspinal injections of a commercial antipneumococcus serum.

Dieulafoy (Vol. II, p. 1421, *Dieulafoy's Medicine*) states "Every variety of cerebro-spinal meningitis, except tubercular, may end in recovery; the cures vary from 15 to 40 per cent."

However, Erdheim believes tuberculous meningitis to be curable, and a number of instances of recovery from tuberculous meningitis are now on record in the literature.

E. v. Leyden, of Berlin in *Modern Clinical Medicine* (1910—page 557) says that acute meningitis is "a severe, fortunately rare, complication, or even a sequel of pneumonia, which is exceedingly dangerous to life." "In general, this severe complication is rare. *Bacteriological examination in several cases showed diplococci* which corresponded to the diplococcus pneumoniae. *I was the first to call attention to, and publish an observation of this kind in the year 1882.*" (Leyden: Translation from "Die Deutsche Klinik"). So that, Leyden's studies on pneumococcal meningitis antedates Jemma's (1896) report on the subject, by fourteen years.

Alfred Martinet (*Clinical Therapeutics*, Vol. II, p. 1486, Second Ed.) of Paris, recommends continuous drainage through lumbar puncture and intraspinal injections of 10 to 20 cubic centimeters of electragol.

James Tyson (*Medicine*, p. 222, 4th Ed.) states that Osler found meningitis in 8 per cent of fatal cases of pneumonia (lobar). Tyson found it often associated with endocarditis, and it may be accompanied by cerebral embolism producing hemiplegia.

In a thorough search of all the available literature, one would likely find one hundred and fifty cases of recovery from true pneumococcus meningitis. Suffice it to say, that in a fairly thorough survey of the literature, I have found cases of recovery from pneumococcus meningitis, and other forms of severe purulent meningitis; and recoveries even from (non-purulent) tuberculous meningitis have been reported in the literature or mentioned in hospital reports, or textbooks of medicine during the past ten or fifteen years. It behooves us, therefore, not to give up as hopeless, any case of severe form of meningitis; and to exert every possible effort and the use of every known means of treatment, whether it be repeated lumbar puncture, cisterna puncture, or



both; ventricular and cisternal drainage; specific serotherapy or chemotherapy. Recoveries have resulted from various forms of treatment, even in the most serious cases. We should therefore, become more hopeful in our prognosis and more energetic and enthusiastic in our efforts, to save some of these almost hopeless and unfortunate cases. *Early diagnosis and prompt and thorough treatment* is the keynote to the situation.

Harold J. Gondolf describes a rapid method for typing in pneumococcal meningitis (*Proc. Soc. Exper. Biol. & Med.* 24: 295-296, Jan., 1927). He prefers the *precipitation reaction*—because in pneumococcus meningitis the spinal fluid offers us a means of producing an antigen for a precipitation reaction which is most satisfactory and permits typing of the pneumococci present in a very short space of time, and because there are many pneumococci present in the spinal fluid of pneumococcal infection of the meninges. This method also aids in the differentiation of pneumococci and streptococci, etc.

Now, as to *pneumococcus endocarditis*—Lutembacher (*Paris Med.* 11: 85, July 23, 1921) reported a case of pneumococcus endocarditis followed by tricuspid insufficiency.

Sawitz's case was one of streptococcus viridans endocarditis and meningitis. Sears and Larrabee, Lutembacher, Menetrier, Sturges, Fisser, Huss, Herman, James, Debove, Wadsworth, Robison, Wells, Pollock, Lenoble and Lahellac, Funk, Thayer, Preble, Palmer, Netter, Kerr, Lenhart, Weichselbaum, Harbitz, Thomas and O'Hara, Romback, Hawkins, Jurgenson, Norris and Farley, Mark and Olesker, Boston, Falconer, de Monchy, Bloomfield, Bullock, Traux, Tickell, Walter, Osler, Andrew, Backfield, Pye-Smith, James and Porrieth, Traube, and others reported cases of pneumococcus endocarditis.

Meyer in 1887, first demonstrated pneumococci in the valvular lesions of acute endocarditis.

L. B. de Monchy (*Nederlandsch tijdschr. v. Geneesk.* 2: 255-256, July 21, 1923) reported a recovery from acute endocarditis with the use of silver salt.

Mark and Olesker used acriflavine in endocarditis.

Falconer used mercurochrome—220 intravenously in chronic septic endocarditis.

Stengel, reported the use of mercurochrome—220 in certain cases of acute endocarditis, at the University of Pennsylvania.

Funk (*Med. Clinics of N. A.*, p. 79, July, 1926) reports a case of pneumococcal endocarditis, in a man aged 65 years, with a pneumonia of the left upper lobe, a vegetative aortic and pulmonary endocarditis due to type I pneumococcus. Funk refers to reports by Norris and Farley, Locke, Thayer, Preble, and Jurgensen. He states pneumococcus pericarditis is much more common than endocarditis, and that arthritis and meningitis are frequently associated with the endocarditis.

Thayer, in 1924 (*Trans. Ass. Amer. Phys.*) found 13 per cent (28) of his 206 cases of bacterial endocarditis due to the pneumococcus.

Funk agrees with other writers that acute pneumococcus endocarditis involves the left heart more often than the right, the relative frequency of right-sided involvement being greater.

Norris and Farley (*Modern Med. Osler & McCrae*, 3rd Ed., 1925, 1, 184) found endocarditis, at autopsy, in 6 per cent of their cases of pneumonia.

As stated before, Locke found 30 cases of acute endocarditis in his series of 835 fatal cases of pneumonia, or less than four per cent (4. per cent).

Boston reported a case of acute endocarditis in pneu-

monia in which there was a small pneumococcal abscess in the wall of the right ventricle.

Tyson believed endocarditis was a comparatively frequent complication and recalled that Osler especially called attention to this fact in his Gulstonian lectures for 1885. Of 209 cases of malignant endocarditis 54, or over 25 per cent occurred as complications of pneumonia. It is more prone to attack persons with old valvular disease and to involve the left heart, according to Tyson, thus agreeing with other writers on the subject. With protracted and irregular fever, chills and sweats, in a case of pneumonia, the appearance of a loud, rough murmur, especially a *diastolic aortic murmur*, endocarditis should certainly be suspected.

E. v. Leyden (Berlin), mentions a case of *pneumococcal endocarditis*, in a coachman 38 years old, that he treated in his clinic in June and July, 1899. About 24 days after his admission, "at the left sternal border a *blowing diastolic murmur* was plainly heard. At the right sternal border the diastolic murmur was much softer. On the following day, the diastolic murmur was plainly heard over the aorta."

Oestreich, at autopsy, found ulcerative endocarditis of the aortic and mitral valves. Smears, cultures, and animal (rabbits) inoculation (from ulcerated valve) all proved the causative organisms to be pneumococci. (Page 557-560 *Modern Clinical Medicine* 1919-11).

McKinley and Holden (*J. A. M. A.* 88, No. 18, p. 1391, April 30, 1927) have called attention to the dangers attending intraspinal treatment with (dibrom-oxymercuro-fluorescein) mercurochrome-220 soluble. They found that this agent is extremely toxic for the nervous system. They mention the unfavorable results obtained by Hengstler, Trout, Lowenburg, Simmons and others. Lowenburg treated a case of tuberculous meningitis intraspinal with dibrom-oxymercuro-fluorescein or mercurochrome, and attributes the death of the patient to the injection. (*Arch. Pediat.* 43: 244, April, 1926).

Morse (*Clinical Pediatrics*, p. 731, 1926) says—Pneumococcus meningitis is almost always fatal within three or four days. He has never seen a child live more than a few days and has never known one to recover. "The prognosis is, therefore, practically hopeless and it is not justifiable to hold out any hope of recovery. Antipneumococcal serum, even in type I, intravenously or intraspinal, does no good. Vaccines are useless." I believe, if the available literature during the past ten years is carefully reviewed, one would be apt to disagree with the above statement.

Herbert W. Chambers (*West London Med. Jour.* XVII, p. 135, 1912) reported three fatal cases of pneumococcal meningitis in patients aged 40 (male), 3 years (female) and 5 years (female) treated at the West London Hospital. The first two of these cases also had ulcerative endocarditis, but no physical signs, except the little girl, had developed marked purpura. It is interesting to note that Chambers states that the first physician in attendance upon the case of the man fell ill with pneumococcal meningitis, and recovered. Spinal fluid from both of these cases showed pneumococci. Dr. L. Dobson mentioned this recovery in discussing Chamber's paper. Wolff and Lehmann (1913), and Chambers and Dobson (1912) reported recoveries from pneumococcal meningitis.

E. Aufrecht, of the Magdeburg-Altstadt City Hospital, in *Nothnagel's Practice* (1902, p. 490-492, Dis. of Pleura and Lungs) mentions that Nauwerck found 29 cases of meningitis occurring in the course of pneumonia (23 men and 6 women), and that in the last 19 cases of meningitis, the pneumonia was noted 14 times to be

in the stage of diffuse, well-developed pus formation. Once an abscess occurred, and twice there was beginning abscess formation. Of the 29 cases, the convexity and base were affected 16 times and the convexity, base and spinal cord, 7 times.

Aufrecht, in 253 cases of croupous pneumonia found meningitis but 7 times (at autopsy). He has noted meningitis 3 times as a complication of pneumonia in patients who recovered.

Aufrecht, among his 1501 cases of pneumonia found but 10 cases of meningitis, while Meyer reported from the Pathological Institute of Dorpat, that in 11 cases of typical croupous pneumonia, in which autopsy was performed—purulent meningitis was found as a complication five times; this is a very high percentage.

As to endocarditis, Aufrecht has seen but a single case of acute endocarditis affecting the aortic valves in the course of pneumonia.

Weichselbaum, Heschl and Netter, found pneumococcal endocarditis to affect more frequently the aortic valves. Aufrecht states this form of endocarditis is distinguished very frequently by the fact that very large and even polypoid vegetations form upon the valves. Dr. Boston and I, have noted these large vegetations in three of our cases.

Weichselbaum found the ulcerative type of endocarditis more frequently than the verrucose variety.

As long ago as 1869, Immerman and Heller discussed the subject of pneumonia and meningitis in *Deutsche Archiv. für klin. Medicine* (Bd. V, p. 1), and emphasized the frequent occurrence of meningitis in the course of pneumonia on the basis of earlier reports in the literature, and the fact that clinically the symptom-complex is occasionally not at all characteristic.

Huguenin (1878) supposed that purulent meningitis in pneumonia in all cases was due to a purulent resolution of the pneumonic exudate.

Nauwerck disagrees with Huguenin, and believes we have to do with an embolic infection with consequent purulent inflammation, this infection arising from material derived from the diseased lung, gaining access to the arterial blood stream.

Aufrecht quotes Weichselbaum's opinion that the pneumococci reach the meninges by means of the cellular tissue of the neck, and there become the cause of the inflammation. Aufrecht found that in two cases in which the pneumonia was in the stage of pus formation, decaying thrombi were in the pulmonary veins. "The assumption is easy to believe that a mixture of the puriform degenerative material gaining access to the arterial blood stream, and then carried to the pia, will result in a consequent purulent inflammation. However, a great number of reliable investigators found the diplococci in the blood of pneumonia patients, and since the occurrence of meningitis is limited to a comparatively small percentage of all pneumonias, it must be ascribed to local conditions which permit the localization and increase of the pneumococcus in the meninges."

Thomas Watson, in his lectures at King's College, London (1840-1848) gave interesting case records of acute purulent meningitis. (*Watson's Practice of Physic*, 1857, pp. 233-239 and 292-294).

Cowden and Wood (April, 1927), of Nashville, Tenn., have used mercurochrome-220 soluble intravenously with satisfactory results in the treatment of septicemia. Cowden used a 1. per cent solution of mercurochrome, and a 0.5 per cent solution of gentian violet.

Rainey and Alford reported two cases of septic meningitis recovered after continuous drainage by laminectomy and the insertion of a small catheter in the subarachnoid space.

Cordua, Wolff and Lehman, Rosenow, and others have reported successful results in the treatment of pneumococcus meningitis by intraspinal injections of ethylhydrocupreine hydrochloride.

I reported a case of pneumococcal Group IV meningitis with autopsy, in *MEDICAL TIMES* (Vol. LII, No. 8, p. 184, August, 1924) and in *American Physician* (1923, Goldstein and Gonzales), we reported four cases of pneumococcus meningitis complicating pneumonia and three cases without pneumonia, all occurring in the various services of Philadelphia General Hospital. Of the three cases without pneumonia, no autopsies were permitted to be performed. Of the four cases of meningitis, complicating pneumonia, all but one were posted.

Case I.—*Pneumococcus (Group IV) Meningitis and vegetative endocarditis*. No. J.8816, Service of Joseph Sailer. E. R., white, male, age 42, admitted May 4, 1922.

Autopsy showed acute vegetative endocarditis (pneumococcus group IV and streptococcus viridans) acute meningo-encephalitis and left lobar pneumonia. Spinal fluid culture showed pneumococcus Group IV, and large numbers of polynuclears in the fluid.

Case II.—*Acute meningo-encephalitis*. No. J. 8948, Service of L. N. Boston, Chief; A. E. Blackburn and H. I. Goldstein, Assistant Chiefs. W. B., negro, male, age 24, admitted May 31, 1922.

Autopsy showed right middle and lower lobe pneumonia (broncho) and acute meningo-encephalitis.

Case III.—*Pneumococcal (Type II) Meningitis*. No. A. 9518, Service of Dr. Fife. White, male child, age 2½ years, admitted December 21, 1921. Spinal fluid culture showed type II pneumococcus. Post-mortem refused.

CASE IV.—*Pneumococcal (Group IV) meningitis and verrucose endocarditis*. Service of L. N. Boston, Chief; A. E. Blackburn and H. I. Goldstein, Assistant Chiefs.

Mrs. Emily Baylor, white, seamstress, age 53, admitted April 2, 1923. Ward 214. K-2270 Lobar pneumonia.

Spinal fluid shows 4,200 cells and a gram-positive diplococcus. Proves to be pneumococcus (Group IV).

*Blood Culture*—Pneumococcus Group IV.

*Autopsy*—Showed massive left pneumonia, acute verrucose endocarditis superimposed on chronic valvular disease, and acute purulent meningitis.

Case XVII.—*Pneumococcus Meningitis and Vegetative Endocarditis of Tricuspid Valve*.

In the Philadelphia General Hospital, Reports (Vol. X, p. 305, 1916), Rosenberger and Bentley, report seven cases of meningitis, all in children, except a case of pneumococcal meningitis which occurred in an adult. This patient was admitted in a stuporous condition with a diagnosis of pneumonia and delirium tremens and died within 24 hours of admission.

The spinal fluid, when first received, was cloudy with abundant sediment, and numerous polynuclears and pneumococci were found. Second specimen of spinal fluid was greenish in color, contained abundant sediment, gave a positive test for bile, and also showed a large number of pneumococci.

At autopsy, a left sided bronchopneumonia was found and a fibrinopurulent meningitis, a massive thrombus in the right auricle, and a large vegetation on the tricuspid valve. Section of the cord and vegetation stained for bacteria by Gram-Weigert technic showed enormous numbers of pneumococci in almost pure culture.

Eleven (11) cases treated at the Mount Sinai Hospital, Philadelphia, Pa. :—

Case I.—Aaron E.—Seven months, No. 23713. Serv-



ice of Harry Lowenburg, Mount Sinai Hospital. Admitted October 20, 1921. Died October 20, 1921 (one hour after admission).

Patient was admitted with a diagnosis of pneumococcal meningitis. Patient was seen by Doctors Lowenburg and Binkowitz (interne).

Case II.—Rita G.—Three years of age. No. 27265. Service of Harry Lowenburg, Mount Sinai Hospital. Admitted January 4, 1923. Died January 6, 1923.

1/5/'23—Patient admitted with headache, vomiting and fever. Child restless and screaming almost continuously.

*Physical Examination*—Disclosed rigidity of neck. No Kernig. No Babinski. No ankle clonus. No definite signs in chest—except few scattered rales. No cardiac murmurs. Lumbar puncture performed and about 40 c.c. of fluid removed under pressure, and antimeningococcus serum injected. Child died at 7:05 a. m.—1/6/'23. At 9:00 p. m., 1/5/'23 temperature rose to 106 degrees, pulse 165, respir. 60. The patient received 30 c.c. antimeningococcus serum and 30 c.c. antipneumococcus serum.

1/4/'23—*Spinal Fluid*—Cloudy, smears show many polynuclear cells, and pneumococci.

*Culture*—Pneumococci.

1/5/'23—*X-ray* (Drs. Rosenbaum and Edeiken)—shows no evidences of pneumonia.

Case III.—Raymond M.—One year old. No. 22,083. Service Harry Lowenburg, Mount Sinai Hospital. Admitted February 14, 1921. Died February 16, 1921.

*Admitted chief complaints*—fever, cough, convulsions, rapid respirations. Patient was sick for five days before admission, when admitted patient had convulsions at 4:00 a. m. next morning—lumbar puncture was done and about 60 c.c. of cloudy fluid under markedly increased pressure was drawn, and 30 c.c. of antimeningococcus serum injected.

*Examination of Spinal Fluid* showed many pus cells and some pneumococci.

2/15/'21—45 c.c. antipneumococcus serum given intraspinally and through fontanelle. Temperature 106 degrees; respirations 55, pulse 160.

2/16/'21—Antipneumococcus serum given. Luminal, morphine and chloral.

2/14/'21—R. B. C.—2,380,000; W. B. C.—25,500; Hb. 40 per cent; Polys.—83 per cent; Sm.—13; Lm.—3; Trans.—1.

2/15/'21—No. 9606. *X-ray* reveals a broncho-pneumonic process through entire right lung and upper portion of left lung. (Drs. Rosenbaum and Edeiken).

Case IV.—Rose S.—Age 13. Service of A. I. Rubenstone, Mount Sinai Hospital. No. 37,271.

*Diagnosis*—Pneumococcus Meningitis.

Patient was admitted June 28, 1925, with headache, fever, marked rigidity of the neck, projectile vomiting, and other signs of Meningitis. Lumbar puncture revealed very cloudy fluid, containing pus, and on culture, *pneumococci*. Several lumbar punctures for drainage were done, and antipneumococcus serum given intravenously without avail. The temperature continued high and the patient was irrational, developed pulmonary edema, and died July 1, 1925.

*Examination of the chest*, on admission, showed no evidence of any consolidation which might have been the original focus.

6/29/'25—R. B. C., 4,200,000; W. B. C., 20,000; Hb., 80 per cent; Polys., 85; Sm. 10; L. M. 5.

6/29/'25—Widal—negative.

Case V.—Jacob G.—White man, age 54. Service A. I. Rubenstone, Med. II, Mount Sinai Hospital. Ad-

mitted August 23, 1926. Died December 8, 1926. Case No. 41,691.

*Final Diagnosis*—Brain abscess, pneumococcal meningitis, chr. sinusitis, chronic fibroid phthisis.

Patient was admitted August 23, 1926, complaining of headache, vertigo, drowsiness, and vomiting. Patient was treated for T. B. at the Eagleville Sanatorium. About a year before admission he was thrown from off a wagon and was unconscious for eighteen (18) hours. Never had any discharge from the ears. The present acute symptoms began two (2) weeks before admission.

*Physical Examination* disclosed coated tongue, diseased tonsils, irregular pupils, react to 1. and a.; chronic fibroid T. B.; corroborated by *X-ray*; weak heart sounds; normal reflexes, and no rigidity of neck; eye grounds negative; infected sinuses corroborated by *X-ray*. *Lumbar puncture* showed 250 cells per field, mostly polynuclear, negative spinal fluid Wasserman. Mastoids were negative. Brain abscess was suspected, in the region of the sphenoid.

December 9, 1926—Dr. Rubenstone thought the purulent spinal fluid probably originated from rupture of an abscess; the result of an injury about a year and a half ago.

*Laboratory Reports*—Urine analysis were practically negative.

August 24, 1926—R. B. C., 4,900,000; Hb., 95 per cent; W. B. C., 9,800; Polys 69 per cent; Small Mon., 28 per cent.; Large Mon., 2 per cent.; Trans., 1. per cent.

October 30, 1926—W. B. C., 22,000; Polys., 92 per cent; S. M., 6; L. M., 1; Epsin, 1.

November 13, 1926—W. B. C., 22,250; Polys., 80 per cent; S. M., 18; L. M., 2.

*Feces*—No. T. B. bacilli.

*Spinal Fluid*—December 8, 1926: 20 c.c. cloudy. 1000 cells per cu. m.m. mostly polys. Albumin, plus. Globulin, plus. Sugar, 90 mgm. per 100 c.c. Pneumococci on smears.

*Colloidal Gold*—22221; 00000. August 24th and 27th, 1926.

*Blood Chemistry*—August 25, 1926: Urea-N-12.5. Sugar, 120 mgm. per 100 c.c.

*Blood Wasserman*—Negative.

*Widal*—Negative (September 14, 1926).

*Eyegrounds* showed evidence of papillary edema due to pressure. Ventriculography suggested (September 28, 1926) was refused.—October 24, 1926 developed left parotitis which was successfully treated surgically.

December 8, 1926—Condition became suddenly worse, and patient died.

Case VI.—*Pneumococcus Meningitis*. Colman L.—31 years of age. Service A. I. Rubenstone, Mount Sinai Hospital. No. 38928. Admission December 6, 1925. Died December 7, 1925.

*Spinal Fluid Examination* showed evidence of pneumococcal meningitis.

Patient was admitted in a delirious state, with a history of headache, pain and stiffness of neck for past two days. Patient had typhoid fever eight years ago, and ear trouble three years previously. No ear discharge on admission. Parotitis, positive Kernig sign, no Babinski, no ankle clonus. December 6, 1923—W. B. C., 22,000.

*Urine Analysis*—Acid, light cloud albumin. Sugar present.

*Spinal Fluid*—40 c.c. under increased pressure. Cloudy. 2700 cells. Albumin 2 plus. No sugar. Polynuclear cells. Pneumococci present.

Doctors Fisher and Lipshutz performed mastoidectomy (bilateral) and upon suggestion of Doctor



Shmookler, surgical drainage of the cisterna-magna, chemotherapy (nearsphenamine) and injection of Huntoon's antibody solution was advised. At 1:30 a. m., December 7, 1925, 100 c.c. of antipneumococcus serum was given intravenously. The patient's condition became very poor while on the operating table, and death occurred before anything else could be done.

At Autopsy (Lab. No. 74.) there was found a thick layer of pus on the convexity of the brain, more on the left side than on the right. The pus was yellowish white and followed exactly the course of the vessels. The leptomeninges at the base of the brain were cloudy, along the course of the vessels, but there was no accumulation of pus. The ethmoidal cells were negative. On section, ventriculi were found free and normal in shape and size. The cerebellum was normal.

**Diagnosis**—Purulent meningitis (pneumococcic.)

Case VII.—Ralph M.—Age 3 years. Service Harry Lowenburg, Mount Sinai Hospital. No. 35,077. Admitted October 26, 1924. Died October 28, 1924.

**Chief Complaint**—Vomiting, fever, restlessness. Baby was delivered by Caesarian section at about the eighth month.

**Physical Examination**—Disclosed normal chest; no ankle clonus; tache' cerebrale, Babinski on both sides. Brudzinski. No typical Kernig. Patellar reflexes normal.

C. S. F. Smears: Showed many polynuclears and many pneumococci.

Patient received four lumbar punctures, Huntoon's antibody solution (pneumococcic) intrathecally, intravenously and intraperitoneally and intravenous mercurochrome (150 c.c.). Administered by Dr. Rubenstone.

Patient had received in all, 30 c.c. antimeningococcic serum intraspinally after first puncture, 25 c.c. and 30 c.c. Huntoon's antibodies intraspinally, 25 c.c. intravenously and 30 c.c. intraperitoneally.

October 28, 1924—Patient died at 1:30 p. m.

October 26, 1924—35 c.c. cloudy spinal fluid removed under pressure.

October 26, 1924—35 c.c. of purulent spinal fluid removed.

October 28, 1924—20 c.c. of purulent spinal fluid removed.

Case VIII.—Julian B.—Age 3 years. Service Harry Lowenburg, Mount Sinai Hospital. No. 35,515. Admitted December 14, 1924. Died December 19, 1924.

**Chief Complaints**—December 16, 1924. Fever, cough, vomiting. Chest was normal. Pupils dilated and unequal. React to light. Patient was stuporous; rigidity of extremities, condition getting worse. Marked Kernig's sign—neck very rigid. Contralateral reflex present.

**Diagnosis**—December 14, 1924—Meningitis. Lumbar puncture done by Dr. Lowenburg. About 30 c.c. cloudy fluid removed under pressure and 30 c.c. of antimeningococcic serum injected by gravity.

December 15, 1924, 8:00 A. M.—Lumbar puncture done. 30 c.c. turbid fluid withdrawn under pressure, and 30 c.c. antimeningococcic serum introduced by gravity method.

4:00 P. M.—Lumbar puncture done, and 20 c.c. turbid fluid removed under increased pressure. About 35 c.c. antipneumococcic serum introduced intraspinally by gravity. Some also given intravenously.

10:00 P. M.—Temperature, 106 degrees.

December 19, 1924, 5:00 P. M.—Temperature rose to 107 degrees and patient died.

Jose Bonaba (*Arch. Latino. Am. de pediat.* 7: 362-365, 1913) reports a case of primary pneumococcus meningitis in a girl two years old with a focus of cerebral

softening. The patient had a right hemiplegia, positive Babinski sign; facial paralysis of same side. There were no rigidity of neck, no Kernig sign on admission to the hospital. Spinal fluid was turbid, and showed 270 cells per cu. mm., polys., 73 per cent; lymphocytes, 27 per cent, and enormous numbers of pneumococci; no tubercle bacilli. Patient died two days later. At autopsy the convexity of the brain was found covered with a thick layer of greenish-yellow pus ("pneumococcic in character"). There was much less pus at the base. In the left hemisphere there was a focus of softening the size of a nut in the motor zone. There were no changes in the lungs. Bonaba states that the contrast between the enormous numbers of pneumococci in the spinal fluid and the slight leucocytic reaction on the part of the fluid in pneumococcus meningitis has been mentioned by other authors.

Marinesco and Botez (*Compt. rend. Soc. de biol.*, Paris, 78: 483-485, June 24, 1915) reported a case of hydrocephalus with nasal hydrops and pneumococcus meningitis in a young man aged 17, suffering from "cerebral adiposity." In this case the fatal pneumococcic meningitis originated in the nasal mucosa and the infection probably extended along the sheaths of the olfactory nerves.

Voron's fatal case of pneumococcus meningitis was a new born male baby. There was a layer of greenish pus spread over the entire cerebral hemispheres. The spinal meninges showed no lesion (except congestion). The lungs, and other organs were normal (*Lyon méd.*, 122: 1219-1220, May 31, 1914).

Dossin reported two cases of pneumococcic cerebrospinal meningitis, a man aged 46 years and a man 39 years old. Both patients died. Pneumonia was present in the two cases. (*Scalpel, Liege*, 66: 611-613, March 22, 1914).

Chenut reported a case diagnosed as cerebral hemorrhage with ventricular inundation. On lumbar puncture gave a cloudy fluid under pressure with a weak polynuclear reaction and a true culture of pneumococci. (*Gaz. hebdom. d. sc. méd. de Bordeaux*, 41: 215, May 2, 1920).

Leclercq and Vanhaecke (*Clinique Breux*, 25: 269-280); J. Clothier (*Laryngoscope* 27: 813-814, Nov., 1917); C. Roubier (*Province méd.*, Paris, 23: 335-336, July 27, 1912); H. Mallie (*J. de méd. de Bordeaux*, 89: 67-69, March, 1918); and Horsley Drummond (*Brit. Med. Jour.*, 1: 179-180, Jan. 27, 1912) reported fatal cases of pneumococcal meningitis. Drummond in reporting three fatal instances of pneumococcic meningitis, also mentions the reports of Immerman and Heller (1868), Netter, Beddard, Liebermeister, Kirchheim, and Hemenway.

Ludwig Kirchheim (*Med. Klin.*, 1908, p. 1461) refers to 500 cases of pneumonia all in young people; in 13 there was in his opinion, clinical proof of meningitis, but ending in recovery; and in 4 only were there signs of purulent meningitis. Kirchheim contends that the milder cases recover. Recently (during the past few weeks) there were treated at the Mount Sinai Hospital, Philadelphia, three cases of severe purulent meningitis—2 were pneumococcic and one streptococcic, all fatal.

Case IX. One of the cases occurred in a child (Henry A.), admitted to the service of H. Lowenburg, September 13, 1927, died Sept. 20, 1927. A diagnosis of pneumococcic meningitis was made. This patient was seen by Doctors Berenblatt, Simpkins, Rubin, Lowenburg, Charney and Edeiken.

The patient was taken ill with headache, vomiting and nasal discharge. The child was hit by an automobile two months ago, and had severe concussion, remaining

in shock for five hours. The patient was discharged in ten days from this hospital. Since the accident until the second admission, the child complained of severe and very frequent headaches—otherwise felt pretty good until the morning of admission (9/13/27). Patient awoke suddenly, crying and complaining of a terrific pain in the head, vomiting, but no convulsions. There was evidence of upper respiratory infection. The patient had diphtheria, measles, and chicken pox, tonsillectomy 2 years before this present illness. Was a premature infant.

Brudzinski (both sides) signs positive, Kernig positive.

Rigidity of neck; no ankle clonus, drowsiness, tache cerebrale, Broth's respiration.

Spinal fluid removed under great pressure. 30 c.c. polyvalent meningococcic serum injected. Pulse 112. Temp. 104 deg.

No pathology in the heart, lungs, abdomen, or bones.

Eye examination—negative (La Fever). Purulent discharge from nose. Ear drums injected, slight bulging; sanguinous fluid obtained on drum punctures (M. A. Weinstein).

	W. B. C.	Pmn.	Sm.	Lm.	Tr.
9/14	38,000	90%	9	1	0
9/15	27,500	93	6	1	0
9/17	39,600	95	0	4	1

9/14—Urine—acid. S. G. 1.010. trace albumin. No sugar. Acetone present. No R. B. C.

9/17—Spinal fluid—Pneumococci on culture—direct smear—many gram positive cocci.

9/16—Blood culture—negative.

Blood Count—W. B. C., 24,600.

86% polys.
10% lymphs.
2 L. M.
2 Trans.

9/16—Direct smear of spinal fluid showed many pus cells, many Gram positive cocci, extra—and intracellular.

Blood plate—Gram positive diplococci. Broth—Gram positive diplococci morphologically *pneumococci*; not further identified.

9/14—Patient received polyvalent antimeningococcic serum. 30 c.c. doses, intraspinally, and intravenously. Local treatment to the nose, throat, and ears. Discharge from ears showed Gram positive diplococci resembling *pneumococci*.

Spinal fluid (9/14/27)—showed 5000 cells, 50 per cent polys and 50 per cent small monos. X-ray (No. 31893); Sinus negative; no pneumonia or pleurisy; heart slightly enlarged to the right. Spleen slightly enlarged. (Geo. Rosenbaum).

9/17—10 A. M.—Intravenous injection of 30 c.c. 1:2000 optochin solution; and 20 c.c. 1:1000 optochin sol. intraspinally after lumbar puncture and drainage.

9/17—10 P. M.—30 c.c. 1:2000 optochin sol. intravenously and 20 c.c. 1:1000 optochin intraspinally.

9/19—Spinal fluid—bloody, cloudy fluid. Albumin + + + +; globulin + + +; reducing substance—negative. Many pus cells.

9/19—20 c.c. 1:1000 optochin sol. intraspinally and 30 c.c. 1:2000 intravenously, following spinal drainage.

Patient received later some Huntoon's *pneumococcic antibody solution*.

9/20/27—Spinal fluid—yellow, cloudy fluid 15 c.c. Albumin + + + +. Globulin + +. Pus present. Reducing substance absent. Before patient died temperature rose to 107 deg.

In this case Henry A.,—8 years old, No. 45687, Huntoon's antibody solution and optochin injections failed to save the patient. May it not be probable and possible,

that the early and prompt use of Huntoon's pneumococcus concentrated antibody solution and optochin, by the cisternal route, with drainage, would have given better results, than the intraspinal route alone, in this case? *Pneumococci* were found on culture of spinal fluid.

Recovery from pneumococcus meningitis in an infant 56 days old was reported by Aldo Lorenzini (*Pediatrics*, 22: 350-359, 1914).

There were enormous numbers of pneumococci and polynuclears in the spinal fluid.

Subcutaneous inoculation of the fluid caused death of the animal from septicemia in 24 hours. Diplococci were isolated from its blood. The patient received two lumbar punctures and drainage. At the age of seventeen (17) months the child is perfectly well.

#### PNEUMOCOCCIC MENINGITIS

Case X, No. 45656. Freda N. Service A. I. Rubenstone, Mt. Sinai Hospital, Phila. This patient seen by Doctors Rubenstone, Schwartz, Goldstein, Kopeika, Somers, Charny and Edeiken.

Patient was admitted to our ward service, as a probable case of diabetic coma, September 12, 1927; died Sept. 13, 1927, 12:10 A. M.

S. 196

Blood pressure —

D. 90

9/12—Lumbar puncture done at 12:15 P. M. 5 c.c. cloudy fluid removed under pressure. At 3 P. M. Lumbar puncture was repeated and 25 c.c. greenish purulent fluid removed under great pressure.

X-ray, No. 31874, 9/13/27—There is broncho-pneumonia throughout the right lung. Considerable parenchymal infiltration in left apex, possibly of tb. origin. Pleurisy of left base; left base compressed and heart appears enlarged to the left. Aorta is somewhat wider than normal—(Louis Edeiken).

No active process in ears (M. A. Weinstein).

Blood chemistry—Urea-N—20 mgm. per 100 c.c. blood. Sugar—300 mgm. per 100 c.c. blood.

Urine—Acid. 1.021; faint trace albumen, occasional hyaline casts, few W. B. C.; sugar, 2.1 per cent.

Blood Count—W. B. C., 30,500; Pmn., 91 per cent; Sm., 5 per cent; Lm., 1 per cent; Trans., 3 per cent.

Cerebrospinal fluid—Under increased pressure, turbid, 202 cells, many polys.; albumin + + + +; globulin + + +. Reducing substance not present.

Gram-positive diplococci—*pneumococci* present.

Culture shows *pneumococci*.

Patient received adrenalin, cardiazol, intravenous glucose, insulin, etc. She died few hours after admission.

#### STREPTOCOCCIC MENINGITIS

Case XI, No. 45447. Ida S. Medical Division II, Mt. Sinai Hospital. Patient seen by Doctors A. I. Rubenstone, M. Schwartz, H. I. Goldstein, A. Trasoff, H. Beerman, and Bellak. Patient was admitted August 27, 1927, and died September 14, 1927, 7 a. m.

Chief Complaints—Severe headache on right side of head. Severe pain in right side of chest and abdomen, fever and vomiting.

In December, 1917, patient was treated in this hospital, for right lobar pneumonia. On August 23, 1927, she was seized with sudden headache, pain in right chest and abdomen, some cough and much vomiting of green material.

Temperature rose to 103 deg. August 25th. No herpes. Eye examination (Dr. H. O. Sloane) was negative.

Chest—Lobar pneumonia of right upper and middle lobes.

Chronic myocardial disease.

9/1/27—Venesection, 9 oz.

S. 130  
9/3/27—Blood pressure ——. D. 60  
W. B. C.—20,900. 88 per cent polys.  
S. 106  
9/4 ——. D. 58  
S. 96  
9/8 ——. D. 60  
S. 160  
9/12—Patient worse. 104° 2 ——. D. 80  
9/12—Extensive process left apex.  
9/13—Positive Kernig sign elicited.  
Lumbar puncture—Cloudy fluid (10 c.c.) removed. Had convulsion. 30 c.c. turbid spinal fluid removed.  
9/14—Generalized convulsions 70-75 c.c. cloudy, blood-tinged spinal fluid removed. Difficult breathing. Administered cardiozol, adrenalin, atropine.  
9/13—Spinal fluid on smears and culture showed streptococci. 2000 cells; polys. predominating. Decreased reducing substance.  
9/10—Blood chemistry—{ Urea-N—25 mgm.  
Sugar—110 mgm.  
9/12—Blood chemistry—{ Urea-N—17 mgm.  
Sugar—155 mgm.  
Blood Wasserman:  
8/30—Negative.  
9/13—Negative.  
8/31—Blood culture—no growth.  
9/5—Blood culture—no growth (8 days).  
Blood count:  
8/27—20,900 W. B. C. Polys 89%. S. M. 11%.  
8/29—{ 25,200 W. B. C. Polys 90%. S. M. 10%.  
4,530,000 R. B. C.  
9/12—22,400 W. B. C. Polys 90%. S. M. 7%.  
L. M. 3%.  
Urine—1.020, trace of albumin, no sugar, no acetone, occasional hyaline casts, occasional W. B. C.  
X-ray No. 31826.—Portable X-ray of Chest—9/8/27. There is little or no change from the previous examination except that at this time a tuberculous lesion is observed in the left upper lobe which would suggest that the consolidation in the right upper lobe is possibly tuberculous in origin. The pleurisy with the possible small effusion in the left base is still present. The heart is enlarged.  
No. 31704—Portable X-ray of Chest, 8/29/27. There is complete consolidation of the right upper lobe. There also appears to be a pleurisy with possible early effusion in the left base, but we cannot be certain of this because of movement while taking films during examination. There are enlarged nodes in the left hilus region. The heart appears to be enlarged to the left.—(Louis Ediken, M.D.)

## CONCLUSIONS.

1. It appears from a study of the literature and the results following various methods of treatment, that the early repeated spinal and cisternal lavage and drainage, the injection intraspinally and intracisternally, of serum or antibody solution and the joint use of ethylhydrocuprein hydrochloride injections offer the best chance of saving the patients suffering from true pneumococcal meningitis. Those cases which fail to show improvement, should have intraventricular injections and lavage through the fontanelle or trephine opening, and possibly also intravenous and intracisternal injections of ethylhydrocuprein solution, mercurochrome-220, neutral acriflavine or metaphen.

2. It is possible, with early diagnosis and prompt and active treatment to save some of our cases of pneumococcus meningitis. Early drainage, and even continuous drainage, will probably give the best results.

3. Two series of cases of pneumococcus meningitis are reported that were treated in the various services at the Philadelphia General Hospital and the Mount Sinai Hospital, of Philadelphia. Four of the seven cases reported from our own service (that of Dr. L. N. Boston) at the Philadelphia General Hospital had pneumococcus endocarditis. One case of pneumococcus meningitis and acute vegetative endocarditis is reported from the service of Dr. D. Riesman, and two cases of purulent meningitis and acute vegetative endocarditis, with lobar pneumonia, is reported from the service of Dr. J. Sailer, Philadelphia General Hospital. One case of acute purulent meningitis was treated by us in the service of Dr. L. N. Boston, Philadelphia General Hospital, which resulted in complete recovery of the patient. An account of this case is included in this report. One case of pneumococcal meningitis, with hypertension (9) is reported from the service of Dr. Ross V. Patterson, Phila. General Hospital. Five cases of pneumococcal meningitis are reported from the service of Dr. H. Lowenburg and three cases from the service of Dr. A. I. Rubenstone, Mount Sinai Hospital, Philadelphia. One case of pneumococcus meningitis and lobar pneumonia is reported from the service of Dr. Geo. M. Piersol, Phila. Gen'l Hospital. One case of pneumococcus IV meningitis is reported from the service of Dr. R. G. Torrey and one case from the service of Dr. T. Le Boutillier.

4. A review of the available literature of the world is included, with a complete bibliography of about two hundred and fifty references.

Thanks are extended to the various chiefs of the two hospitals for their kindness in permitting me to use the records of their patients and to report the cases.

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## BIBLIOGRAPHY

- <sup>1</sup>Freemont-Smith: Cerebro-spinal fluid in Differential Diagnosis, *J. A. M. A.*, Vol. 88, N. 14, p. 1078, April 2, 1927.
- <sup>2</sup>Aiello, G.: Tryptophan Test in cerebro-spinal fluid, for diagnosis of T. B. meningitis. *Riforma Medica*, Naples, 43: p. 35, Jan. 10, 1927.
- <sup>3</sup>Musser, J. H.: Eighteen cases (fatal) pneumococcal meningitis, treated by combined cisternal and lumbar puncture, lavage and serum. *J. A. M. A.*, Vol. 88, No. 15, p. 1126, April 9, 1927.
- <sup>4</sup>Käding: Several cases suppurative and epidemic meningitis with recovery. *Med. Klinik*, 16: 1007, Sept. 1920.
- <sup>5</sup>Hartmann: Vaccine in suppurative meningitis; *Deutsche Med. Wchnschr.*, 47: 357, March 31, 1921.
- <sup>6</sup>Preble: One hundred and thirty-two (132) cases pneumococcus endocarditis (collected from literature). *Am. J. Med. Sci.*, Nov., 1904.
- <sup>7</sup>Chickering: Meningitis, Billings-Forscheimer, Blumer Ed., Vol. ii, p. 797.
- <sup>8</sup>Dieulafoy: Meningitis, Dieulafoy "Medicine," Vol. ii, p. 1421.
- <sup>9</sup>Rolly: Six (6) cases of pneumococcal meningitis. *Deutsche Med. Wchnschr.* xxxvii, 774, 1911.
- <sup>10</sup>Peterman: Recovery; pneumococcal meningitis. *Arch. Pediat.* xLi, 70, 1924.
- <sup>11</sup>Cumming: Recovery; pneumococcal meningitis. *Lancet*, ii, 1294, 1912.
- <sup>12</sup>Holt and Howland: Meningitis; "Diseases of Children," Eighth Ed., p. 718.
- <sup>13</sup>Neal: Meningitis (24 recoveries collected). *Tice Practice of Med.*, Vol. x, p. 255-265, chap. x.
- <sup>14</sup>Dabney and Graves: Fatal case pneumococcal meningitis. *Kentucky M. J.*, 20: 400-401, June, 1922.
- <sup>15</sup>Bickel, G.: Primary fulminating pneumococcal meningitis. *Ann. de Med.*, ii, 169-174, February, 1923.
- <sup>16</sup>Van der Kooi, D.: Pneumococcal meningitis, with apoplectic onset. *Nederlandsch Tijdschr. v. Geneesk.*, 2: 2695-2696, Nov. 26, 1921.
- <sup>17</sup>Lutembacher: Pneumococcal endocarditis, tricuspid insufficiency. *Paris Med.*, ii, 85, July 23, 1921.
- <sup>18</sup>Jeandel: Recovery from pneumococcal meningitis after serotherapy. *Bull. et Mem. Soc. Med. d. Hop. de Paris*, 47: 1653-1656, Nov. 30, 1923.
- <sup>19</sup>Wieder: "Apparent Cure," finally fatal; pneumococcal meningitis. *Laryngoscope*, 34: 609-620, Aug., 1924.
- <sup>20</sup>Paisseau and Alajouanine: Cure from pneumococcal meningitis and double pneumonia. *Bull. et Mem. Soc. Med. d. Hop. de Paris*, 47: 1625-1630, Nov. 25, 1923.
- <sup>21</sup>Porta Pereyra, E.: Protracted case pneumococcal meningitis. *Rev. Med. de Uruguay*, 27: 70-75, March, 1924.
- <sup>22</sup>Paisseau, Alajouanine and Duchon: Pneumococcal meningitis with dissociation of cells in C. S. F. *Paris Med.*, 1: 439-443, May 10, 1924.

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# Medical Times

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## Thoughts on Sunlight

The healing processes of nature are slow. Sunlight normalizes gradually, in rachitic children, the calcium-phosphorus metabolism. It aids in the slow restoration to health of convalescent patients. It gradually improves the sense of well-being in the healthy. But its immediate effects are at best a grateful sense of warmth, easily passing into depression and ennui, and at worst insolation or severe burnings. And the untoward effects are not those of the healing rays, whose beneficence is long delayed.

The propaganda for sunlight would be more easily put over if its effects gave an immediate "kick," like, say, the imbibition of coffee. Nature seems perverse; she makes substances capable of deleterious effects most charming in their immediate appeal, while she makes perhaps the greatest source of energy—sunlight—a source of immediate fatigue and injury if only slightly abused.

One thing is certain. If sunlight on the fully exposed body had the immediate effect of coffee the prudery of our puritans would be knocked into a cocked hat very speedily (would never have been), and even the President of the Society for the Suppression of Vice would walk down Broadway in trunks, at the very most, while highly respectable spinsters whose chief indoor sport now is flirting with pernicious anemia would be seen arrayed as wood-nymphs, in transparent draperies, in the purlieus of Central Park.

It would seem that nature herself is a prude, greatly concerned about the behavior and morals of humanity.

She seduces no chaste ones and never plays to the galleries. She is not a melodramatic healer.

But her benefits are nevertheless the most real of any in the world—a glory unto the Lord forever.

## "Athlete's Heart" a Myth?

Cabot declares that if recent acute infections and arterio-sclerosis are excluded, there is no reason to believe that acute dilatation or athlete's heart exists. He denies that the heart dilates after athletic contests and Marathon races; in such circumstances, he insists, x-ray shows that it is generally slightly smaller than usual.

Hypertrophy does not result from muscular exertion, according to Cabot, no matter how great and prolonged, when arterio-sclerosis and syphilis can be excluded.

"The cases of weak, rapid or irregular heart action, occurring in adolescence or later and wrongly supposed to be due to athletics, are in fact cases of nervous heart or post infectious weakness, accentuated often by the alarm produced by a mistaken diagnosis of heart strain, dilatation or athlete's heart. Of course in cases of organic heart disease, valvular or myocardial, compensation may be broken by excessive exercise."

This is very comforting doctrine, if true, and involves a very considerable recasting of shopworn opinions.

## No More Great Ones

A distinguished publicist finds in the apparent lack of geniuses to-day the truth that there are no outstanding men any longer for the good reason that there are so very many able men in the foreground of affairs.

This idea would account for the apparent lack in the ranks of present-day medicine of any men of the heroic mould who figure in the annals of the past, or even in the memory of some of us who are living.

It is true that in the infancy of science a Harvey necessarily stands out like a Colossus, whereas to-day the experts on the vascular system constitute whole brigades and divisions. For one Pasteur there are now whole armies of accomplished bacteriologists.

And within the ken of living men the early gynecologists in this country seem as a small company of Titans, whereas today Marion Sims has battalions of descendants of far greater knowledge and skill than their spiritual ancestor.

We fancy that the distinguished publicist's idea is a sound one.

## Germany's Birth Rate

The fall in the German birth rate, according to Professor Grotjahn, is due to birth control, and it is not going to rise when housing facilities and economic conditions improve. The downward tendency was observable in the pre-war period and is now greatly accentuated. Fifty years ago there were forty-three births per thousand married couples; in 1914 the number dropped to twenty-nine, and now it is only twenty-one, with the Berlin rate only fourteen.

"The low mortality (today thirteen per thousand population) gives the impression that the population of Germany is increasing. But the low mortality is due mainly to the fact that the age groups, as a result of the post-war periods, which caused an exceedingly heavy mortality among the sick, the war-shattered and the aged, have changed distribution, and to the fact that the middle-age groups with a lower mortality are at present more strongly represented. The effects of the decline in the birth rate will, therefore, not become so apparent for a number of years."

### Why Light Cures

Professor Drummond, of University College, London, thinks that the beneficial effects of exposure of the skin to ultraviolet radiations, either as sunlight or in the form of suitable artificial light, are brought about by a synthesis from cholesterol of the vitamins which otherwise it would be necessary to supply in the diet.

Cholesterol is found in every cell of the skin. So the work of Steenbock and Drummond in establishing fundamental facts in this field will yet lead to a telling of the whole story, and that very soon.

While on this subject of light therapy it is just as well to remind the reader that we are probably in for a period in which this valuable adjunct will be abused and commercially exploited. Familiar history will be repeated. There is already a strong movement in England looking to the limitation of this important resource to very distinctive indications, while in the United States the American Medical Association is interesting itself in resisting such abuses as the sale of apparatus to laymen for self-treatment and to other unqualified persons of one sort or another. What is the use of training physicians and their legitimately associated workers to apply light therapy through numerous and differing instrumentalities if there is to be an orgy of exploitation and commercialism on the part of unscrupulous Babbitts and go-getters?

## Miscellany

### William Lyon Phelps on the Good Old G. P.

I have been reading a book that should be read by all physicians, surgeons, specialists, nurses, and by all people who have ever been sick—this includes nearly everybody who can read English. There are, of course, exceptions. We hear of curiosities who have never had a day's sickness; I met a man of about eighty who told me that never in his life had he felt physical pain. I asked him if he had never had a headache? Never. Nor a toothache? Never. Nor any discomfort caused by eating? Never. I told him he ought to be ashamed of himself. I met a man of over fifty who said he had never in his life taken a pill, and a man of thirty who could never remember any occasion when he had wakened up once in the night; he had invariably slept solidly from bedtime to breakfast. Such persons exist, but they are as rare as the Siamese twins, and cannot therefore hurt the sale of this book.

It is a biography called "The Beloved Physician, Sir James Mackenzie," by R. Macnair Wilson, and was first published in the autumn of 1926. Dr. Mackenzie was born April 12, 1853, and died January 25, 1925. Although he became one of the most famous of heart specialists, this book is a glorification of the family physician, the General Practitioner, who may become obsolete, but who is still one of the most useful men in the community.

Nothing either in this book or in this article can honestly be taken as a slur on the specialist, on the laboratory man, on the experimentalist, and most certainly not on the surgeon; by glorifying one branch of the noble profession of healing one is not belittling other departments.

In our time the surgeon has come into his own; he is the Modern Hero. He does daily such marvelous things that we do well to honor him. In his white uniform and

rubber gloves he has something of the sanctity of the priest and the glamour of the soldier. In one of his novels Thomas Hardy speaks of a surgeon "whose hands have been inside the bodies of hundreds of living men." One day, going into a club, I saw a surgeon and a friend of his eating heartily, talking and laughing together with gusto, and it was with a start that I remembered that only a short time before that surgeon's hands had been inside of the body of his healthy table companion.

Every State in the Union has today a number of those who work miracles with the knife, relentless enemies of death. In my own State of Connecticut there is one who came to America as an Italian immigrant peasant boy, William F. Verdi. By patient study, labor and sacrifice, by developing a skill in manipulation equal to that of a genius in music, by having a divination in diagnosis that enables him to see with the naked eye through a wall of bone, he has become one of the foremost surgeons of America, and his acts of kindness are as numerous though not so noticeable as his miracles.

Dr. Mackenzie was a physician who learned his business by long years of bedside study. He lived in a small town in England and saw the same patients year after year, knowing them and their families and watching symptoms and results. He came to the conclusion that the old-fashioned way of visiting the sick, was the best of all training for a physician—for nothing, no laboratory experiment, can take the place of the study of symptoms in human beings. If you feel ill, you are not well; what is the cause of this ill-feeling, how does it manifest itself, is it dangerous, and if or if not, how can it most quickly be cured? By the study of thousands of individual persons, who were not numbered cases in a hospital but actual men and women whose characters and personalities he knew, Dr. Mackenzie was led to his great discoveries about diseases of the heart. So convinced was he of the importance of this method that he not only advised all young doctors to become general practitioners, he himself, after brilliant success in an office in London, finally went back to general practice.

The G. P. used to be a familiar sight and this is how he lived. He had an office hour in his house from 8 to 9; then he drove out in his buggy and made his morning calls; then after dinner, he had another office hour from 2 to 3; then the buggy and a house-to-house canvass from 3 to 6. Then supper and an office hour from 7 to 8. From 8 to 10 he was free to live with his family, unless he were called out then or later in the night in emergency cases. This man had an intimate acquaintance with the men, women and children he visited; he knew their family history; he knew by looking at them whether they were really sick or merely had a case of "nerves"; with no instrument, but merely with his practiced hands, he knew whether it was serious or merely "muscular."

One of the best examples I ever knew—and how Dr. Mackenzie would have loved him!—was the late Dr. W. J. Harrington of Huron County, Michigan. Canadian by birth, taking his medical degree at the University of Michigan, he went to a tiny village on Lake Huron called Grindstone City. For year after year he hitched up in the early morning and drove through sandy roads in summer and snow drifts in winter to his patients, covering a daily circuit of many miles.

Finally, when, owing to the benefaction of a public-spirited man, a hospital was erected in the county town, Dr. Harrington moved thither and opened an office. His immense success in office and hospital practice had been prepared by these visits over the countryside. On the occasions when he was able to go to Europe he took no holiday, but spent all his time in the hospitals, and he



took in and read the medical journals. That man had a knowledge of disease and a skill in curing it that could have been obtained only in one way.

Though our times are the times of specialists, let us never speak slightly of the good old family doctor, who combined a knowledge of symptoms with a knowledge of human nature. Every G. P. who reads "The Beloved Physician" will feel like cheering.—*New York Evening Post*, July 9, 1927.

### The Scientific Method

A story was going the rounds this summer at one of the great biological stations on the eastern seaboard. It seems that a member of the scientific staff at this station recently became the father of twins. One he baptized; the other he kept as a "control."

### A New "Cure" for Insomnia

As no physical ill is more prevalent among the dwellers of this city than insomnia, so no greater boon for the multitude could be given them than a means of obtaining nightly rest in sleep. The torture endured nightly by the many because of the city's roar of traffic and the physical breakdowns that are sure to follow owe their origin mostly to the destruction of the capacity to fall into natural sleep.

Experiments in France in the vibrations of sound have been going on for some time. Lately M. Marcel Natier of Paris, with the aid of an assistant, says the *Chronique Medicale*, discovered the sedative effects of sounding a diapason, and that it produced upon all those hearing the sound continued not only a somnolence, but in a short time they would be overcome by sleep. M. Natier himself testifies that while looking on at his assistant's experiments he could not struggle against the inclination to sleep. As the sonorous waves of sound, as they are repeated, possess an agreeable influence, it appears that patients quite unaware of the soporific influence of the vibrations or their curative power have also declared themselves cured, after treatment, of severe headaches of several hours' standing.

M. Natier happened to have a veterinary surgeon for one of his patients. He conceived the happy idea of applying the same treatment to certain restive horses, those for instance who require to have some slight operations for their ease performed upon them, as well as for the horses that need to be shod. From a medical point of view it has been found that the nervous system is acted upon in this vibratory treatment so favorably that the circulation receives immediate benefit. Both the quality and character of the sounds which possess these curative powers have been strictly determined and are the practical feature of the discovery. M. Natier declares the sounds to be limited to diapasons in the second or third octave, whether amplified or not by the addition of a sounding board, and that they frequently induce a diminution, or rather a total relief, from a heaviness in the head, and sometimes put an end to severe headaches. If the treatment is prolonged an agreeable somnolence follows which can be developed into sound sleep.

High pitched vibrations quickly arouse unpleasant excitement, and deep bass notes are fatiguing because of the strain to hear them. It is easy to imagine what complications might arise should this curative instrument ever be made so as to enter on the market as a purchasable article for curing headaches and insomnia by self-treatment. For instance, a Mr. B., recently married, might frequently return to his home and

find Mrs. B. curing her headache by the sound of a diapason, which ultimately cures the pain; but it puts not only the sufferer to sleep but those who remain in her presence as well. Mr. B. flees from the house in self-protection. In that way he acquires the habit of spending his evenings away from home. Then again, a Miss G. is dressing for a dinner—in her room at one of the fashionable hotels. Her next door neighbor is curing himself of some head disorder by this same little instrument. Miss G. finds her eyes growing very heavy in the midst of her "makeup," when she should be exceedingly wide-awake and alert. As the sounds are repeated over and over she rushes for her salts bottle and, taking many sniffs at it so as to keep awake, wonders all the time what can have brought about this sleepiness. Finally she manages to get into her lovely Doucet gown and to have advanced as far as the putting on of her gloves. Gladly she sinks into an easy chair to make this last effort, hoping to be called for every moment to dispel this dreadful drowsiness in the fresh air. One glove has been buttoned, while the other is half way up her arm.

There it remains—until 3 o'clock in the morning—when she starts up in alarm and in consternation, discovering her predicament. Hastily she sends a summons to a member of her family on the same corridor and declares she is desperately ill and had fallen into a swoon and lay there for hours in that chair. Great is the excitement that follows. A physician enters, and is greatly puzzled, because he finds the young woman in a perfectly sound, normal condition. He calls again in the morning—to be still more puzzled. The mystery has never been cleared up satisfactorily to the young lady or her family—and by common consent it has never been alluded to.—*Foreign Exchange*.

### Newspaper Medicine

There seems to be a new conspiracy against the freedom of the press in British Columbia. We gather this from the excitement of the *Vancouver Sun*. In its issue of August 4 it asks: "Are the editors of this continent to be silenced while thousands of lives of our readers are being taken by the black magic of serums and unnecessary surgery?" That might seem to be a hard question, if intended to be anything more than rhetorical, but really it is easy. Editors should not be silenced, if they are sure that they have something which ought to be published for the benefit of humanity. But if they are tempted to go into matters about which they are ignorant, the thing for them is silence, and mighty little of that, according to the Nantucket story. It seems that the *Vancouver Sun* has been trying to give the public "health information, written, not from the old medical angle, but from the newer and common sense point of view." That recalls the former authority on the old medical angle, Dr. O. W. Holmes, who defined the common sense point of view as truly meaning my sense, not yours.

The particular controversy in British Columbia remains obscure at this distance. No one challenges the right of a newspaper to do all it can for public sanitation. It should also be thought a duty as well as a pleasure to print all the news possible about progress in medicine and surgery. But for the press to endeavor to set up a little medical practice of its own is to go beyond its proper function, and to do a thing perilous at once to its readers and to itself. General rules for right living and the publication of sound medical advice in times of epidemic or peculiar stress of heat or cold are



all very well, and may have real public usefulness, but a newspaper had best avoid opening a clinic or setting up a dispensary.—*New York Times*.

### Endocarditis and Meningitis

(Concluded from page 266)

- <sup>22</sup>Musham: Pneumococcal meningitis. *Klin. Wchnschr.*, 3: 2055, Nov. 4, 1924.
- <sup>23</sup>Rieder: Recovery from pneumococcal meningitis by lumbar puncture only. *Klin. Wchnschr.*, 3: 1628-1629, Sept. 2, 1924.
- <sup>24</sup>Verger, C. F.: Meningitis of optic origin; sixty-three (63) cases at Cook County Hospital. *J. A. M. A.*, 79: 1924-1927, Dec. 2, 1922.
- <sup>25</sup>Fleischmann: Serotherapy and chemotherapy of otitis and rhinogenic meningitis. *Klin. Wchnschr.*, 1: 217-220, Jan. 28, 1922.
- <sup>26</sup>Blechmann, G.: Pneumococcal meningitis injection antiserum through fontanelle and subarachnoid space. *Nourrisson*, 9: 179, May, 1921.
- <sup>27</sup>Laforge: Primary pneumococcal septicemia and subacute pneumococcal meningitis. *Bull. et Mem. Soc. Med. Hop. de Paris*, 45: 264, Feb. 25, 1921.
- <sup>28</sup>Schulthess: Two (2) cases recovery purulent meningitis. *Schw. Med. Wchnschr.*, 51: 631, July 7, 1921.
- <sup>29</sup>Underwood: Recovery after twenty-one (21) lumbar punctures, Meningoc. mening. *Kentucky M. J.*, 19: 63, Feb., 1921.
- <sup>30</sup>Lortat-Jacob and Grivot: Cured case staph. mening. with vaccine. *Bull. et Mem. Soc. Med. d. Hop. de Paris*, 44: 1555, Dec. 17, 1920.
- <sup>31</sup>Pollock: Pneumococcal endocarditis. *Irish J. M. Sc.*, p. 18-19, March, 1923.
- <sup>32</sup>Lenoble and Lahelle: Right pneumococcal endocarditis and pneumonia. *Bull. et Mem. Soc. Med. d. Hop. de Paris*, 47: 1256-1259, July 27, 1923.
- <sup>33</sup>De Monchy: Recovery from acute endocarditis with silver salt. *Nederlandsch. Tijdschr. v. Geneesk.*, 2: 255-256, July 21, 1923.
- <sup>34</sup>Hallé: *Bull. et Mem. Soc. Med. d. Hop. de Paris*, 47: 757-762, May 25, 1923.
- <sup>35</sup>Mark and Olesker: Acriflavine in endocarditis. *Deutsche Med. Wchnschr.*, 49: 17, Jan. 5, 1923.
- <sup>36</sup>Falconer: Mercurochrome, 220, intravenously in chr. septic endocarditis. *So. African Med. Record*, Jan. 9, 1926.
- <sup>37</sup>Netter and Cesari: Purulent pneumococcal meningitis. *Bull. et Mem. Soc. Med. d. Hop. de Paris*, 47: 734-768, May 25, 1923.
- <sup>38</sup>Nuhsman: Treatment of meningitis (otogenous) with Vuzin. *Ztschr. f. Hals-, Nasen-, U. Ohrenh., München. u. Berlin*, 1924, x, 244-249; discussion 254-256.
- <sup>39</sup>Schack: Sero- and chemotherapy of meningitis. *München. Med. Wchnschr.*, Lxxi, 1498, 1924.
- <sup>40</sup>Campbell, J.: Pneumococcal meningitis. *Lancet*, London, i, 54, 1925.
- <sup>41</sup>Acuna and Casaubon, A.: Pneumococcal meningitis. *Arch. Latino-Am. de pediat.*, Buenos Aires, 3, S., xviii, 520, 1924.
- <sup>42</sup>Acuna and Casaubon, A.: Mening. a pneumococcus en la infancia. *Rev. Assoc. Med. Argent.*, Buenos Aires, 1924, xxxvii, 105-117.
- <sup>43</sup>Goldstein, Hyman I.: Pneumococcus meningitis with and without pneumonia. *American Physician*, Philadelphia, 1923.
- <sup>44</sup>Goldstein, Hyman I.: Meningitis; Report of five (5) cases. *New York Med. Jour.*, May 3 and 10, 1919.
- <sup>45</sup>Goldstein, Hyman I.: Pneumococcus meningitis. Report of case with autopsy. *Medical Times*, N. Y., Lii, No. 8, p. 184, Aug. 1924.
- <sup>46</sup>Goldstein, H. I.: Meningitis. *Joru. Med. Soc.*, N. J., 1918, xv, 409; xvi, 3.
- <sup>47</sup>Goldstein, H. I.: Purulent meningitis, with recovery. *Med. Jour. and Record*, N. Y., August 3, 1927.
- <sup>48</sup>Litchfield, H. R.: Routine use of mening. serum, until a definite diagnosis is made. *Arch. Pediat.*, 43: p. 691, 1926.
- <sup>49</sup>Bruce, J. W., and Flexner, N.: Recovery in meningococcal meningitis in child seven years, from intravenous use of serum. *Arch. Pediat.*, 43: 473, 1926.
- <sup>50</sup>Ratnoff and Litvak: Recovery pneumococcus meningitis optochin (Morgenroth's). *Arch. Pediat.*, 43: 466-472, July, 1926.
- <sup>51</sup>Peet, M.: Advanced meningococcal meningitis; cisternal, ventricular and lumbar puncture. *J. A. M. A.*, 86: 1818, June 13, 1926.
- <sup>52</sup>Mitchell and Reilly: Cistern puncture. Infant four months old cured. *Am. Jour. Med. Sci.*, 164: 66, July, 1922.
- <sup>53</sup>McLean and Caffey: Sporadic meningococci meningitis. *J. A. M. A.*, 87: 91, July 10, 1926.
- <sup>54</sup>Hamburger: Serum treatment after substitution of C. S. F. with air. *Wien. Klin. Wchnschr.*, 39: 497-498, April 20, 1926.
- <sup>55</sup>Anderson: Repeated lumbar puncture; recovery. *Brit. M. J.*, i, 943, June 5, 1926.
- <sup>56</sup>McAskill: Mercurochrome in leptomeningitis (purulent). *Ann. Otol. Rhinol. and Laryngol.*, 35: 509-507, June, 1926.
- <sup>57</sup>Siegl and Sollerub: Serum treatment of meningitis. *Arch. f. Kinderh.*, 70: 1-10, Aug., 1926.
- <sup>58</sup>Watson-Williams: Operative treatment of meningitis. *Bristol Med. Chir. Jour.*, 43: 91-95, 1926.
- <sup>59</sup>Hengstler: Mercurochrome. *Minnesota Med.*, 9: 240-243, May, 1926.
- <sup>60</sup>Klinke: Oxygen in T. B. meningitis. *Monatschr. f. Kinderh.*, 31: 339-341, Feb., 1926.
- <sup>61</sup>Synge: Recovery; pneumococcal meningitis. *Lancet*, 1: 761-762, April, 10, 1926.
- <sup>62</sup>Douthwaite: Recovery; pneumococcal meningitis; cisternal puncture. *Lancet*, i, 1035-1037, May 29, 1926.
- <sup>63</sup>Jacob and Wondt: Treatment grave septic meningitis. *Ztschr. f. Klin. Med.*, 103: 92-107, 1926.
- <sup>64</sup>King: Pneumococcal meningitis from sinusitis. *Lancet*, 2: 545, Sept. 11, 1926.
- <sup>65</sup>Roussel: Pneumococcal meningitis. Recovery. *Atlantic Med. Jour.*, 30: 159-160, Dec., 1926.
- <sup>66</sup>Dandy: Treatment of staph. and strept. meningitis by continuous drainage of cisterna magna. *Surg. Gynec. Obst.*, xxxix, 760-774, 1924.
- <sup>67</sup>Piazza Missorici, A.: Treatment of purulent meningitis. *Pediatrics*, Napoli, xxxiii, 195-207.
- <sup>68</sup>Alderman: Epidemic of pneumococcal infection at East. State Hospital. *Virginia M. Month.*, Richmond, Li, 348-351, 1924.
- <sup>69</sup>Armstrong Valverde, C. A.: Pneumococcal meningitis. *An. Fac. de Med. de Lima*, vi, 211-264, vi.
- <sup>70</sup>Acuna and Casaubon, A.: Pneumococcal meningitis in children, six cases. *Rev. Soc. Med. Argent.*, 37: 105-107, June and Dec., 1924.
- <sup>71</sup>Ervin, C. E.: Pneumococcal meningitis; recovery. *Atlantic M. J.*, 29: 500, June, 1925.
- <sup>72</sup>Hennings, N.: Intralumbar optochin treatment of meningitis. *Med. Klinik*, 20: 1834-1836, Dec. 25, 1924.
- <sup>73</sup>Goldberg, B. I.: Intraspinal use of Gentian Violet. *Boston M. and S. Jour.*, 192: 350-353, Feb. 19, 1925.
- <sup>74</sup>Trub: Trypaflavin in meningitis. *Arch. f. Ohren-, nasen-, u. Kehlkopfhe.*, Leipzig, Cxxii, 151-159, 1924-1925.
- <sup>75</sup>Wuff, E.: Puncture cisterna cerebello-medullaris; suboccipital puncture in meningitis. *Ugesk. f. Laeger*, Kobenh. 1925, Lxxxvii, 500-503.
- <sup>76</sup>Adjal, Mahmoud: *Paris*, 1924, 31: p. 8.
- <sup>77</sup>Nowicka, Helene: The chloride content of the C. S. fluid and its significance in meningitis. *Polska Gaz. Lek.*, Krakow, 1924, iii, 394-396.
- <sup>78</sup>Goodkind: Fulminating pneumococcal meningitis. *Med. Clin.*, Chicago, 1915-1916, 775-780.
- <sup>79</sup>Brown, A. G.: Pneumococcal meningitis with recovery following vaccine. *Lancet*, London, 1916, ii, 519.
- <sup>80</sup>Weill, Mouriquand and Dufourt: Pneumococcal meningitis. *Gaz. Med. de Paris*, 23: 1915, Lxxxvi.
- <sup>81</sup>Bryant: Treatment of purulent meningitis. *Ann. Otol.*; *Phinol.* and *Laryngol.*, St. Louis, 1914, xxiii, 897.
- <sup>82</sup>Ghon: Etiology purulent meningitis. *Deutsche Med. Wchnschr.*, Leipzig u. Berlin, 1916, xLii, 244.
- <sup>83</sup>Chvostek: Meningitis C. S. epidemica, case report. *Militaerarz.*, Wien, 1879, xiii, 220.
- <sup>84</sup>Cheadle, W. B.: C. S. meningitis, opisthotonos, extreme emaciation, general muscular rigidity and hyperaesthesia, treated by iodide of mercury; recovery. *Brit. M. J.*, London, 1879, ii, 986. (This patient later (8 months) developed T. B. meningitis and died).
- <sup>85</sup>Hutinel: Suppurative meningitis. *Bull. Soc. Clin. de Paris*, 1878, 1879, ii, 26-29.
- <sup>86</sup>Sutton: C. S. meningitis with embolism. *Med. Herald*, Louisville, 1879, 1880, i, 393-396.
- <sup>87</sup>Thomas and O'Hara: Pneumoc. Type I. Endocarditis following pneumonia. *Bull. John Hopkins Hosp.*, 31: 417, Nov., 1920.
- <sup>88</sup>Taylor and McKinstry: Suppurat. mening. simulating diabetic coma. *Lancet*, i, 182, Feb. 8, 1917.
- <sup>89</sup>Woster-Draught and Kennedy: Pneumococcal meningitis. *Brit. M. J.*, 2: 481, Oct., 13, 1917.
- <sup>90</sup>Levinson, A.: *Illinois M. J.*, 32: 270, Oct. 1917.
- <sup>91</sup>Clothier, J.: Pneumococcal meningitis following supp. otitis media. *Laryngoscope*, 27: 513, Nov., 1917.
- <sup>92</sup>Tilgrin, J.: Four cases pneumococcal meningitis. *Svenska lak-sallsk. handl.*, 43: 1002, Sept., 1917.
- <sup>93</sup>Kieley: Certain aspects of purulent meningitis. *J. Lab. and Clin. Med.*, 2: 341, Feb., 1917.
- <sup>94</sup>Christian, H. A.: Acute vegetative endocarditis. *International Clinics*, 3: 1, 1918.
- <sup>95</sup>Woolley: Meningitis and pneumonia. *J. Lab. and Clin. Med.*, 3: 602, July, 1918.
- <sup>96</sup>Mallie: Pneumococcal meningitis. *J. de Med. de Bordeaux*, 89: 67, March, 1918, Ab. 70: 1573, May 25, 1918.
- <sup>97</sup>Faanayotabon, G.: Two cases pneumococcal meningitis. *Brit. J. Child. Dis.*, 15: 16, Jan.-March, 1918.
- <sup>98</sup>Cleland and Ferguson: Cases of influenzal and pneumococcal meningitis. *Med. J. Australia*, 1915, i, 303.
- <sup>99</sup>Ely's (1915) and Boland's (1915) cases were influenzal meningitis.
- <sup>100</sup>Gordon, A.: Pneumococcal meningitis. *Proc. Path. Soc. Phila.*, 1915, N. S., xvii, 87.
- <sup>101</sup>Hill and Packard: Influenzal meningitis; report of five cases, with one recovery. *Lancet*, *Clinic*, Cincinnati, 1915, Lxiii, 723-728.
- <sup>102</sup>Morquio: Pneumococcal meningitis. *Rev. Med. d. Uruguay, Montevideo*, 1915, xviii, 1-18.
- <sup>103</sup>Chase, S.: Meningitis; Pneumococcal meningitis. *Compt. Rend. Soc. de Biol.*, Paris, 1915, Lxxviii, 483-485.
- <sup>104</sup>Hancock: Purulent meningitis with recovery. *Brit. M. J.*, 1919, ii, 106.
- <sup>105</sup>Taylor and McKinstry: Supp. meningitis with glycosuria simulating diabetic coma. *J. Roy. Army Med. Corp*, London, 1918, xxxi, 237-241.
- <sup>106</sup>Urbantschitsch: Eitrigue Meningitis und Schläfenlappenhypothese; operation; cure. *Wien. Klin. Wchnschr.*, 1918, xxxi, 744.
- <sup>107</sup>Stewart: C. S. meningitis; recovery. *Edin. M. J.*, 1880-81, xxvi, 128-131.
- <sup>108</sup>Rosenow, G.: Heilung der Pneumokokkenmeningitis durch optochin. *Deutsche Med. Wchnschr.*, Leipzig u. Berlin, 1920, xLvi, 9-10.
- <sup>109</sup>Kolmer and Idzumi: Chemotherapeutic studies with ethylhydrocuprein and mercuraphen in exper. pneumoc. meningitis in rabbits. *J. Infect. Dis.*, Chicago, 1920, xxvi, 355-372.
- <sup>110</sup>Gould: Pneumococcal meningitis; recovery. *Boston M. & S. J.*, 1919, CLxxxi, 713.
- <sup>111</sup>Chenut: Meningitis pneumococcal suraigue. *Gaz. Hebdom. d. Sci. Med. de Bordeaux*, 1920, xLi, 215.
- <sup>112</sup>Chase: Pneumococcal meningitis following sinusitis. *J. Oklahoma Med. Assoc.*, 1920, xiii, 187-188.
- <sup>113</sup>Hirsch: Petechial Exanthem with pneumococcal meningitis. *Med. Klinik*, 16: 181, Feb. 15, 1920.
- <sup>114</sup>Kolmer: Treatment pneumococcal meningitis with optochin. *Therap. Gaz.*, 44: 607, October, 1920.
- <sup>115</sup>Fitzgerald: Meningococcal and pneumococcal meningitis. *J. A. M. A.*, 71: 969, Sept. 21, 1918.
- <sup>116</sup>Salanier: Pneumoc. invasion in meningoc. meningitis. *Arch. de Med. d. Enf.*, 30: 449, Sept., 1917, Ab. 70: 656, March 2, 1918.
- <sup>117</sup>Wright: Meningitis. *St. Barth. Hospital J.*, London, 1902-03, x, 82-86.
- <sup>118</sup>Ager: Differential diagnosis meningitis in childhood. *Brooklyn M. J.*, 1903, xvii, 414-416.
- <sup>119</sup>Starr, L.: Case of croupous pneumonia with cerebral symptoms (meningitis). *Obst. J. Gr. Brit.*, *Am. Suppl.*, Phila., 1879, vi, 161-165.
- <sup>120</sup>Zielewicz, J.: C. S. meningitis complicated croupous pneumonia. *Deutsche Med. Wchnschr.*, Berlin, 1879, v, 591-593.
- <sup>121</sup>Maximowitsch, J.: Suppurat. meningitis. *St. Petersburg. Med. Wchnschr.*, 1880, v, 375.
- <sup>122</sup>Frolich, H.: Clinical study of the newer observations and discoveries concerning C. S. meningitis. *Wien. Klinik.*, 1881, vii, 43-78.
- <sup>123</sup>Patsch: C. S. meningitis, hemiplegia; cure. *Charité-Ann.*, 1879, Berlin, 1881, vi, 176-182.
- <sup>124</sup>Hervey: Pilocarpine in meningitis. *Gaillard's M. J.*, N. Y., 1881, xxxi, 423.
- <sup>125</sup>Goodhue, G.: Chloral in meningitis. *Ohio M. J.*, Columbus, 1881-82, i, 145-151.
- <sup>126</sup>Ceccherelli: Pilocarpine in meningitis. *Bull. d. sci. med. di Bologna*, 1882, 6.s., x, 98-102.
- <sup>127</sup>Bouchut: Diagnosis of meningitis by ophthalmoscope. *Cong. Period Internat. d. Sci. Med. Compt. Rendu*, Geneva, 1878, 865-8.
- <sup>128</sup>Sauerwald-Ceynhausen: A severe case of meningitis. *Deutsche. Ztschr. f. Prakt. Med.*, Leipzig, 1875, v, 465.
- <sup>129</sup>Willich, E.: Concurrence of meningitis in croupous pneumonia. *Deutsche Med. Wchnschr.*, Berlin, 1879, v, 321-324.
- <sup>130</sup>Hayden: C. S. meningitis. *Dublin J. M. Sci.*, 1878, s. s., Lxvi, 343.
- <sup>131</sup>Carter: Occurrence of C. S. meningitis. *Lancet*, London, 1878, ii, 730.
- <sup>132</sup>Heineman, H. N.: C. S. meningitis, acute endocarditis and pericarditis. *Med. Rec.*, N. Y., 1881, xx, 746.
- <sup>133</sup>Wilson, J. C.: Etiology, diagnosis, treatment, meningitis. *Med. News*, Phila., 1882, xLi, 624-626.
- <sup>134</sup>Ayer, J. B.: Puncture of the Cisterna Magna. *Arch. Neurol. and Psychiat.*, 4: 590, Nov., 1920.
- <sup>135</sup>Ayer, J. B.: Brief view of certain mechanical considerations in the

- treatment of meningitis. *N. Y. State M. J.*, 24, 389, March 21, 1924.
- <sup>127</sup>Ebaugh, F. S.: Puncture of cisterna magna. *J. A. M. A.*, 85, 184, July 18, 1925.
- <sup>128</sup>Bennett, A. E., and Simmons, E. E.: Serum treatment of men. meningitis by combined cisterna and lumbar injections. *Nebraska State Med. Jour.*, Feb., 1927, xii, No. 2, p. 54-56.
- <sup>129</sup>Reiche, A.: Blowing out of cerebro-spinal fluid in treatment of meningitis. *Monatsh. f. Kinderh.*, 31: 295-299, Dec-Jan., 1926.
- <sup>130</sup>Kolmer, J. A.: Chemo- and sero-therapy of pneumococcus and streptococcus meningitis. *Arch. Otolaryng.*, 3: 481-513, June, 1926.
- <sup>131</sup>Wolff and Lehmann: Recovery from pneumococcal meningitis by intralumbar and intraventricular injection of ethyl-hydrocuprein. *Deutsche Med. Wchnschr.*, Leipzig u. Berlin, 1913, xxxix, 2509.
- <sup>132</sup>Wolff and Lehmann: Pneumococcal meningitis and treatment with optochin. *Jahrb. f. Kinderh.*, Berlin, 1914, N. F., Lxxx, 188-200.
- <sup>133</sup>Gordon: Pneumococcal meningitis. *N. Y. Med. Jour.*, 1914, c, 559-561.
- <sup>134</sup>Lafforgue: Pneumococcal meningitis; leucocytes. *Provence Med.*, Paris, 1911, xxii, 461-463.
- <sup>135</sup>Lafforgue: Pneumococcal meningitis. *Med. Press and Circ.*, London, 1912, N. S., xCiv, 348-351.
- <sup>136</sup>Lafforgue: Pneumococcal meningitis. *Paris Med.*, 1911-12, ii, 234-240.
- <sup>137</sup>Lamar, R. V.: Exper. pneumococcal meningitis and its specific treatment. *J. Exper. M., Lancaster, Pa.*, 1912, xvi, 581-606.
- <sup>138</sup>Roubier: Pneumococcal purulent meningitis. *Province Med. Paris*, 1912, xxiii, 335.
- <sup>139</sup>Lorenzini: Pneumococcal meningitis. *Pediatrics, Napoli*, 1914, 2, s. xxii, 350-359.
- <sup>140</sup>Bonaba, J.: Pneumococcal meningitis. *Arch. Latino-Am. de Pediat.*, Buenos Aires, 1913, vii, 362-365.
- <sup>141</sup>Dossin: Pneumococcal meningitis. *Scalpel, Liege*, 1913-1914, Lxvi, 611-613.
- <sup>142</sup>Dufougere: Pneumococcal meningitis. *Bull. Soc. Path. Exot.*, Paris, 1914, vii, 466-469.
- <sup>143</sup>Voron: Pneumococcal meningitis. *Lyon Med.*, 1914, Cxxii, 1219.
- <sup>144</sup>Kleinschmidt: Pneumococcal meningitis. *Med. Klin.*, Berlin, 1911, vii, 1195.
- <sup>145</sup>Leclercq, J., and Vanhaeck: Primary pneumococcal meningitis. *Clinique, Brux.*, 1911, xxv, 269-280.
- <sup>146</sup>Kolly: Prognosis of pneumococcal meningitis. *Deutsche Med. Wchnschr.*, Leipzig, u. Berlin, 1911, xxxvii, 774-778.
- <sup>147</sup>Chambers: Three cases pneumococcal meningitis. *West London M. J.*, London, 1912, xvii, 135-138.
- <sup>148</sup>Drummond: Pneumococcal meningitis. *Brit. M. J.*, London, 1912, i, 179.
- <sup>149</sup>Thompson: An unusual case of C. S. meningitis. *Med. Rec.*, N. Y., 1893, xLiii, 422.
- <sup>150</sup>Venturi, T.: C. S. meningitis, endocarditis and croupous pneumonia. *Sperimentale, Communicaz. e Riv.*, Firenze, 1893, 152-159.
- <sup>151</sup>Lheritier de Chazell e et Prieur: Pneumococcal meningitis. *Poiton Med.*, Poitiers, 1893, vii, 1-7.
- <sup>152</sup>Hutinel: Pneumococcal meningitis and pneumonia. *Med. Press & Circ.*, London, 1893, N. S., Lvi, 103-105.
- <sup>153</sup>Bozzolo: Pneumococcal meningitis. *Gazz. d. Osp.*, Milano, 1894, xv, 553-555.
- <sup>154</sup>Wentworth: Meningitis in infants and children. *Boston M. & S. J.*, 1898, Cxxxviii, 241, 268, 289, 318.
- <sup>155</sup>Moty: Trephine and drainage for meningitis. *Bull. Soc. Centr. de Med. du Nord, Lille*, 1898, 2, s. ii, 97-110.
- <sup>156</sup>Gaillard, L.: Pneumococcal meningitis. *Bull. et Mem. Soc. Med. d. Hop. de Paris*, 1898, 3, s. xv, 425-427.
- <sup>157</sup>Sevestre: Pneumococcal meningitis. *Bull. et Mem. Soc. Med. d. Hop. de Paris*, 1898, 3, s. xv, 514-518.
- <sup>158</sup>Savary: Pneumococcal meningitis. *Bull. Med. de Quebec*, 1902, iii, 219-223.
- <sup>159</sup>Achard and Laubry: Pneumococcal meningitis. *Gaz. Hebdom. de Med. et Chir.*, Paris, 1902, xLix, 301-306.
- <sup>160</sup>Bauer: Pneumococcal meningitis in de graviditate. *Nederl. Mand-schr. v. Verlosk.*, Leiden, 1918, vi, 139-141.
- <sup>161</sup>Boinet: Pneumococcal meningitis. *Marseille Med.*, 1918, Lv, 72-75 (Dix Cas).
- <sup>162</sup>Tillgren, J.: Pneumococcal meningitis. *Svenska Lak-Sallsk. Handl.*, Stockholm, 1917, xLiii, 1003-1014.
- <sup>163</sup>Bertelsmann: Recovery from otitic meningitis. *Deutsche Med. Wchnschr.*, Leipzig u. Berlin, 1901, xxxvii, 277.
- <sup>164</sup>Guinon: Pneumococcal meningitis. *Bull. et Mein. Soc. Med. d. Hop. de Paris*, 1901, 3, s. xviii, 599-601.
- <sup>165</sup>Petitfour, M.: Meningitis and pneumonia. *J. de Med. et Chir. Prat.*, Paris, 1901, 4, s. Lxxii, 360-362.
- <sup>166</sup>Tschinkel, R.: A case of diplococcal meningitis. *Prag. Med. Wchnschr.*, 1901, xxvi, 553-555.
- <sup>167</sup>Sepe, Paul: T. B. Meningitis; recovery. *Med. Mod.*, Paris, 1902, xlii, 225-226.
- <sup>168</sup>Milan et Chiray: Pneumococcal meningitis. *Bull. et Mem. Soc. Anat. de Paris*, 1902, 6, s. iv, 550-552.
- <sup>169</sup>Perrin: Basilar pneumococcal meningitis. *Ann. de Med. et Chir. Infant.*, Paris, 1902, vi, 649-654.
- <sup>170</sup>Pinna, G.: Intravenous injection of corrosive sublimate solution in acute C. S. meningitis. *Suppl. al Policlin.*, Roma, 1900, vi, 1203-1205.
- <sup>171</sup>Elfstrom, C. E.: Serum of treatment of pneumonia. *Brooklyn M. J.*, 1900, xiv, 603-608.
- <sup>172</sup>Fredy, Paul: Etiology of otogenous meningitis. *Inaug. Dissert.*, München, 1902, Feb., No. 11.
- <sup>173</sup>Wilson, Thos.: Primary pneumococcal meningitis simulating puerperal eclampsia. *Birmingham M. Rev.*, 1902, Li, 215-219.
- <sup>174</sup>Clark, F. S.: Three cases of meningitis in which Kernig's sign was persistently absent. *Am. J. M. Sci.*, 1902, Cxxiii, 783-784.
- <sup>175</sup>Thomalla: Recovery; tuberculous meningitis. *Berlin Klin. Wchnschr.*, 1902, xxxix, 565-567.
- <sup>176</sup>Barth, K.: Recovery; tuberculous meningitis. *München Med. Wchnschr.*, 1902, xLix, 877-878.
- <sup>177</sup>Jemna: C. S. meningitis due to diplococcus Frankel. value of lumbar puncture. *Cron. d. Clin. Med. di Geneva*, 1896-7, iv, 38-41.
- <sup>178</sup>Henke, F.: Bacteriology of acute primary C. S. meningitis. *Arch. s. d. Feb. d. Path. Anat. Inst. zu Tubing.*, Braunschweig, 1894-6, ii, 279-292.
- <sup>179</sup>Councilman, Mallory & Wright: C. S. meningitis and its relation to other forms of meningitis. *J. Best. Soc. M. Sci.*, 1897-98, ii, 53-57.
- <sup>180</sup>Hoemann, R. B.: Case of C. S. meningitis, with temperature 109 F. complicating pneumonia. *N. Y. Med. J.*, 1898, Lxvii, 292.
- <sup>181</sup>Zariquicy, R.: Purulent C. S. meningitis; lumbar puncture; cure. *Rev. de Clin. Med. de Barcel.*, 1897, xxiii, t. 2, 257-262.
- <sup>182</sup>Barr, J.: Treatment of meningitis. *Liverpool M.-Chir. J.*, 1895, xv, 503-505.
- <sup>183</sup>Cantley, E.: Trephining in meningitis (tuberculous). *Brit. M. J.*, London, 1895, ii, 715.
- <sup>184</sup>West, S.: Recovery from tuberculous meningitis. *Brit. M. J.*, London, 1895, i, 1206.
- <sup>185</sup>Greaver, C. A.: A case of advanced meningitis; craniotomy; recovery; remarks. *Lancet*, London, 1895, i, 746.
- <sup>186</sup>Sangree, E. B.: Fatal leptomeningitis due to diplococcus pneumoniae. *J. A. M. A.*, 1897, xxviii, 975.
- <sup>187</sup>Glaeser: Purulent meningitis. *Deutsche Med. Wchnschr.*, Leipzig u. Berlin, 1897, xxviii, 834.
- <sup>188</sup>Kulyosha: Etiology of purulent C. S. meningitis.
- <sup>189</sup>Williams: Seventy-one cases of C. S. meningitis. *Med. and Surg. Rep.*, Boston City Hosp., 1898, 9, s. 106, 1 tab.
- <sup>190</sup>Boenitsch: *Gaz. Botkina, St. Petersburg*, 1898, ix, 518, 582.
- <sup>191</sup>Bascoe, P.: Case of epidemic C. S. meningitis with recovery following lumbar puncture. *J. A. M. A.*, 1898, xxxi, 182.
- <sup>192</sup>Cutler: C. S. meningitis. *Boston M. & S. J.*, 1898, Cxxxix, 518-520.
- <sup>193</sup>Fussell, M. H.: Purulent C. S. meningitis. *Trans. Path. Soc. Phila.*, 1898, xxviii, 408-410.
- <sup>194</sup>Bone, D.: Etiology of cerebrospinal meningitis. *Gior. Med. d. r. Escripio, Roma*, 1898, xLvi, 1045-1055.
- <sup>195</sup>Scherer: Ein Beitrag Zur Aetiologie der Leptomeningitis purulenta bei Säuglingen. *Jahrb. f. Kinderh.*, Leipzig, 1894, xxxix, 1-11.
- <sup>196</sup>Holst: Suppurativ meningit. *Tidsh. f. d. norske Laegefor.*, Kristiania, 1895, xv, 21: 35.
- <sup>197</sup>Powell: Cerebral embolism; pneumonia; purulent meningitis. *Mid-dlesex Hosp. Rep.*, London, 1894, 83: 400.
- <sup>198</sup>Ricketts: Removal by trephine of fluid in acute cerebral meningitis with report of a case. *Internat. M. Mag.*, Phila., 1894-5, iii, 822-825.
- <sup>199</sup>Bronner: Purulent meningitis of aural origin. *Lancet*, Eng., 1898, ii, 204.
- <sup>200</sup>Marcuse: Purulent meningitis (Eitriges). *Wien. Med. Wchnschr.*, 1898, xLvi, 2078-2082.
- <sup>201</sup>Miller, D. J. M.: Acute purulent meningitis. *Tr. Path. Soc. Phila.*, 1898, xxviii, 368-370.
- <sup>202</sup>Napier, A.: Recovery from tuberculous meningitis. *Glasgow M. J.*, 1898, 2, 339-342.
- <sup>203</sup>Brower: Acute cerebral meningitis; etiology, diagnosis and treatment. *Chicago M. Recorder*, 1898, xv, 203-206, discussion 263-274.
- <sup>204</sup>Ria: Terapia della meningite cerebro-spinale infettiva. *Boll. d. Clin.*, Milano, 1894, xi, 368-377.
- <sup>205</sup>Worochilsky, J.: Anwendung von heissen Bädern in Zwei Fällen von Meningitis cerebrospinalis. *Therap. Monatsh.*, Berlin, 1895, ix, 65-67.
- <sup>206</sup>Hehr, R.: A sporadic case of C. S. meningitis; recovery. *Indian M. Rec.*, Calcutta, 1895, ix, 286.
- <sup>207</sup>Consalvi, G.: Treatment of C. S. meningitis with hypodermic injection of bichloride of mercury. *Policlin.*, Roma, 1895-6, ii, Suppl., 156-159.
- <sup>208</sup>Woods, Eliz.: Two cases pneumococcal meningitis. *Woman's M. J.*, Toledo, 1894, iii, 6-10.
- <sup>209</sup>Crutchfield: C. S. meningitis; recovery. *Gaillard's M. J.*, N. Y., 1894, LViii, 1-8.
- <sup>210</sup>Straschinsky: Three cases of suppur. meningitis. *Trudi Obsh. Dietsk. Vrach.*, Mosk., 1894, ii, 80-85.
- <sup>211</sup>Zorkendorfer: Bacteriology of supp. meningitis. *Prag. Med. Wchnschr.*, 1893, xviii, 211-213.
- <sup>212</sup>Carr: Clothier, Mallie, Ettinger, Panayotabon, Solari, Tillgren, and many others have reported cases and have written on the subject of pneumococcus meningitis.
- <sup>213</sup>Goldstein: *J. Med. Soc. N. J.*, Orange, 1918, xv, 409; xvi, 3.
- <sup>214</sup>Aufrecht, E.: Endocarditis and meningitis in croupous pneumonia; 3 recoveries from meningitis. *Netthagen's Practice, Dis. Pleura and Lungs*, 1902, p. 400-492.
- <sup>215</sup>Aufrecht, E.: Two cases of cerebrospinal meningitis. *Deutsche Med. Wchnschr.*, 1880, No. 4.
- <sup>216</sup>Immerman and Heller: Pneumonia and meningitis. *Deutsche Archiv. fur Klin. Medicin*, 1869, Bd. v, p. 1.
- <sup>217</sup>Meyer, Hugo: Acute endocarditis and meningitis as complications of croupous pneumonia. *Deutsche Archiv. fur Klin. Medicin*, 1887, Bd. xLi, p. 433.
- <sup>218</sup>Foa, Pic., and Bordini-Uffreduzzi: C. S. meningitis and pneumonia-bacteriology. *Deutsche Med. Wchnschr.*, 1886, No. 75, p. 249.
- <sup>219</sup>Fraenkel, A.: C. S. meningitis and pneumococci. *Deutsche Med. Wchnschr.*, 1886, No. 13; *Berliner Klin. Wchnschr.*, 1886, Nos. 23, 24, 24.
- <sup>220</sup>Nauwerck: Eitriges meningitis bei croupöser pneumonie. *Deutsches Archiv fur Klin. Medicin*, 1881, Bd. xxix, p. 1.
- <sup>221</sup>Netter: *Archives de Phys. et Path.*, Tome viii, 1886.
- <sup>222</sup>Netter: C. S. meningitis. *Fraenkel's Diplococcus; La Rif Med.*, 1895, 140-148.
- <sup>223</sup>Weichselbaum: Ueber endocarditis pneumoniae. *Wiener Med. Wchnschr.*, 1888, No. 35, 36, pp. 1178 and 1210.
- <sup>224</sup>Parkinson: Recovery; pneumococcal meningitis. *Bull. Jour. Child. Disease*, 1904, 1, 112.
- <sup>225</sup>Sander: Recovery; pneumococcal meningitis. *Amer. Jour. Med. Sci.*, 1920, CLix, 246.
- <sup>226</sup>Schilleau and Pasquiere: Pneumococcal meningitis; recovery. *Gaz. Med. de Nantes*, 1910, 2, s. xxviii, 261.
- <sup>227</sup>Steinforth, A.: Pneumococcal meningitis; recovery. *Arch. Med. Belges, Brux.*, 1912, xL, 248-254.
- <sup>228</sup>Savy and Gate: Pneumococcal meningitis; 2 recoveries. *Lyon Med.*, 1913, Cxxi, 55.
- <sup>229</sup>Hugeunin: Acute and chronic inflammation of the brain, etc. *Ziems-sen's Handbuch*, 1878, Bd. xi, p. 635.
- <sup>230</sup>Aufrecht, E.: Eitriges meningitis, two months after pneumonia, empyema and hirnabscess. *Deutsches Archiv. fur Klin. Medicin*, 1897, Bd. Lix, p. 627.
- <sup>231</sup>Fischer, P.: Recovery from meningitis secondary to middle ear disease. *Prager Med. Wchnschr.*, April 2, 1903.
- <sup>232</sup>Avanzino: Recovery from tuberculous meningitis. *Riforma Medica*, August, 26, 1903.
- <sup>233</sup>Wolf: Pneumococcus chief cause of circumscribed meningitis. *Berliner Klin. Wchnschr.*, March 8, 1897.
- <sup>234</sup>Crouzat: Rapid death after childbirth from pneumococcus meningitis. *Rev. Obst. Internat.*, April 21, 1897.
- <sup>235</sup>Jaeger: 60-70 per cent of recorded cases of C. S. meningitis showed Frankel's diplococcus lanceolatus. *Zeit. f. Hyg. u. Infect.*, B. 19, H. 2, 1895.
- <sup>236</sup>Thomalla: Recovery from tuberculous meningitis. *Berliner Klin. Wchnschr.*, June 16, 1902.
- <sup>237</sup>Watson, Thos.: *Meningitis Cases. Practice of Physic.* (Lectures delivered at King's College, London), 1857, pp. 233-239, and 292-294.
- <sup>238</sup>Mayne: Cerebrospinal meningitis. *Dublin Quarterly Journal of Medical Sciences*, Aug., 1846.
- <sup>239</sup>Rollet: Cerebrospinal meningitis. *Bulletin d'Acad. Roy. de Med.*, viii, 43.
- <sup>240</sup>Gillkrest: Cerebrospinal meningitis (in children between two and fifteen years of age). *Medical Gas.*, July, 1844.
- <sup>241</sup>Kolmer: *Chemotherapy of Pneumococcus Meningitis*. p. 161-163, *Chemotherapy*, 1926, Saunders.
- <sup>242</sup>Cordua: Pneumococcal meningitis (treated with ethyl-hydrocuprein. *Berlin. Klin. Wchnschr.*, 58: 1323, 1921.



## The Physician's Library

**Physical Diagnosis.** By Richard C. Cabot, M.D., Professor of Medicine in Harvard University and formerly Chief of the West Medical Service at the Massachusetts General Hospital. Ninth edition, revised and enlarged, with six plates and 279 figures in the text; pp. 536, including an index; William Wood and Company, New York; 1927.

Of this standard work but little need be said, since its many excellences are so familiar to the profession. The sections on tuberculosis, cardio-vascular disease and the blood have been revised. Reference numbers correspond to a set of phonograph records marketed by the Columbia Phonograph Company of New York which illustrate normal heart sounds, the "third heart sound," systolic, presystolic, mid-diastolic and early diastolic murmurs, auricular fibrillation, and bigeminal rhythm.

**Clinical Case-Taking.** By George R. Herrmann, M.D., Ph.D., Assistant Professor of Medicine, Tulane University, New Orleans; pp. 90, including index; C. V. Mosby Company, St. Louis; 1927.

This is a supplement to Professor Herrmann's most excellent work, *Methods in Medicine*. It is a guide for the study of the patient and for the comprehension of clinical medicine, and sets an ideal for both hospital and private practice. The diagnostic data are arranged in the natural sequence of the history, and of the physical and laboratory examinations. By student, interne and practitioner alike this guide will be found an indispensable aid in the logical working-up of any one of the multitude of symptoms of which a patient might complain.

**Cancer Control.** pp. 336; The Surgical Publishing Company, Chicago; 1927.

This volume is a report of the International Symposium held under the auspices of the American Society for the Control of Cancer, at Lake Mohonk, September 20-24, 1926. The addresses of Soper and Welch at the open session are first presented, and then follow the twenty-nine papers read at the executive sessions by the world's most distinguished authorities on cancer, after which the formal resolutions passed by the Symposium are printed. While the discovery of the cause of cancer and the way to suppress it appear to be still far off, there is a rapidly growing interest in the subject and this volume gives correct information, now definitely demanded by the laity.

**Getting Well and Staying Well.** By John Potts, M.D.; pp. 223, including index; the C. V. Mosby Company, St. Louis; 1927.

Dr. Pott's book is intended for tuberculous patients and public health nurses, and for doctors who have not had special training and wide experience in the diagnosis of early tuberculosis or who need a manual formulating the principles upon which good teaching of this subject should be based. It is a practical and safe guide for the three groups aforesaid, advocating nothing that has not proved useful, and devoid of crochets, fads and hobbies. In an introduction, Dr. J. B. McKnight, Superintendent and Medical Director of the Texas State Tuberculosis Sanatorium, heartily endorses the book.

**Manual of the Diseases of the Eye,** for Students and General Practitioners. By Charles H. May, M.D.; 12th edition, revised, with 374 original illustrations, including 23 plates and 73 colored figures; William Wood and Company, New York; pp. 445; 1927.

Dr. May's revision of his most popular work, of which several foreign as well as the twelve American editions have now been issued, brings it fully abreast with the latest ophthalmologic knowledge. As in former editions, the author says just enough for the student and general practitioner. While still small in size it is comprehensive and extremely practical. It still presents only fundamentals, eschewing lengthy theories and rare conditions. The common diseases are emphasized and the essentials of ophthalmic diagnosis as it relates to general diseases are adhered to. It will continue to hold its unique place.

**Potassium and Tartrates.** A Review of the Literature on their Physiological Effects. By Ralph W. Webster, Ph.D., M.D., Professor of Medical Jurisprudence in the University of Chicago; Director of the Chicago Laboratory, etc.; with a Digest and Bibliography of the Literature, by W. A. Brennan, A. B.; the Commonwealth Press, Chicago; pp. 168; 1927.

Much literature is presented upon which Dr. Webster's conclusions are based that the potassium ion, when introduced parenterally, has definite toxic effects upon muscle and nerve

tissue, upon the central nervous system, and upon the heart and circulation, and when retained may cause phenomena such as are manifested in uremia. When potassium salts are given by mouth they do not ordinarily influence the circulation much, but may cause cardiac irregularity and aggravate already existing renal or cardiac disease. The tartrates, when administered orally, intravenously, intraperitoneally, or subcutaneously, cause nephritis, there being, apparently, no strict relation between the dose of tartrate and the extent of damage inflicted. They should be used with caution, especially when the tartrate radical is combined with the potassium ion, and especially in clinical cases showing renal disturbance.

**The Human Body in Pictures: A visual Text of Anatomy, Physiology, and Embryology.** By Jacob Sarnoff, M.D., Associate Surgeon, United Israel-Zion Hospital; Attending Surgeon, Harbor Hospital, etc. Pp. 120, with 190 illustrations. Physicians and Surgeons Book Co., 1927.

Dr. Sarnoff's manual was designed to be used in conjunction with a series of still pictures and motion picture films drawn and photographed by the author. Each reel is covered by a separate chapter in which the subject matter is outlined, often in simplified terminology, and helped along as the occasion requires by explanatory notes on problems that arise in the average mind. Each reel covers its subject too rapidly to be of great value to medical students, as even the author suggests in alluding to the "fleeing images" of motion pictures. Repetition, the most valuable factor the student has in his books and lectures, will be found lacking in this form of instruction. However, students of biology and general science in high school, college, or nurses' training school will find the combination of still pictures, motion pictures, and accompanying manual of great assistance in correlating ideas and facts that have already been presented to them in their regular courses of lectures.

L. G. BODKIN.

**Captains of the Watch of Life and Death.** By Mabel Osgood Wright. Pp. 264. Published by the Macmillan Company, New York, 1927.

We have here a book that aims to introduce to each other the patient, the physician, and the nurse, by picturing each one in varying lights—good, bad, and indifferent—as viewed by the other two when in actual contact with one another. The author exhibits a wide understanding of the problems of nursing; she writes of many general and individual difficulties that most of us never stop to consider—though we should. The "first step" of the young nurse recently graduated from training school is described; the patient, "trained" and "untrained," is given kindly advice along with stinging criticism. An example of the thoroughness with which the author pursues her subject is shown in her inclusion of even the romantic element of the situation. "Should a nurse marry her patient?" is the title of a chapter that affords material for many a smile.

L. G. BODKIN.

**Fistula of the Anus and Rectum.** By Charles John Drueck, M.D., F.A.C.S., Professor of Rectal Diseases in the Post-Graduate Hospital and Medical School, Chicago; 66 original illustration; pp. 318, including index; F. A. Davis Company, Philadelphia; 1927.

This is a book much needed by those who treat patients suffering from rectal fistulae, which means practically everybody. It is based upon the distinguished author's vast experience in this field and embodies many original ideas and techniques, revealed particularly in the section on Excision of the Fistula. Upon all varieties of fistula—horseshoe, rectolabial, rectovaginal, rectourethral, rectovesical and pilonidal—a great deal of extremely helpful light is thrown. We are glad to note the author's advice against probing fistulae before operation. The book deals most helpfully with the new problem of fistulae arising from the application of radium. Altogether this is a most important monograph upon a disorder upon which there is but little highly informed teaching and about which there is much unclarified opinion. It should be read by everyone charged with the care of fistulae and conscientious in preserving the functions of the sphincters, levator ani, and important nerve and blood-vessel trunks.

### Sanitation As Essential As Ever

Typhoid immunization, while at times a necessity, should not replace or influence any known hygienic or sanitary procedures that may reduce the dangers of typhoid fever. Proper sewage disposal, filtration and chlorination of water, pasteurization of milk, and detection and control of typhoid carriers should take precedence as preventive measures. Extensive vaccination is demanded only when these procedures for some reasons cannot be carried out, or when typhoid cases arise in spite of the precautions.